NASA

PATENT ABSTRACTS BIBLIOGRAPHY

A CONTINUING BIBLIOGRAPHY

Section 1 • Abstracts

Annotated references to NASA-owned inventions covered by U.S. patents and applications for patent that were announced in *Scientific and Technical Aerospace Reports (STAR)* between January 1974 and June 1974.

Scientific and Technical Information Office
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JULY 1974
Washington, D.C.

NASA SP-7039 (05)
Section 1
Abstracts

NASA PATENT ABSTRACTS BIBLIOGRAPHY

A CONTINUING BIBLIOGRAPHY

Section 1 • Abstracts

JULY 1974

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ACCESSION NUMBER RANGES

Bibliography Number	*STAR Accession Numbers*
NASA SP-7039(04)	N69-20701—N73-33931
NASA SP-7039(05)	N74-10001—N74-21629

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Tisco, Inc.

INTRODUCTION

Several thousand inventions result each year from the aeronautical and space research supported by the National Aeronautics and Space Administration. The inventions having important use in government programs or significant commercial potential are usually patented by NASA. These inventions cover practically all fields of technology and include many that have useful and valuable commercial application.

NASA inventions best serve the interests of the United States when their benefits are available to the public. In many instances, the granting of nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of this objective. This bibliography is published as a service to companies, firms, and individuals seeking new, licensable products for the commercial market.

The *NASA Patent Abstracts Bibliography (NASA PAB)* is a semiannual NASA publication containing comprehensive abstracts and indexes of NASA-owned inventions covered by U.S. patents and applications for patent. The citations included in *NASA PAB* were originally published in NASA's *Scientific and Technical Aerospace Reports (STAR)* and cover STAR announcements made since May 1969.

For the convenience of the user, each issue of *NASA PAB* has a separately bound Abstract Section (Section 1) and Index Section (Section 2). Although each Abstract Section covers only the indicated six-month period, the Index Section is cumulative covering all NASA-owned inventions announced in STAR since May 1969. Thus a complete set of *NASA PAB* would consist of the Abstract Section of Issue 04 (January 1974), the Abstract Section for all subsequent issues, and the Index Section for the most recent issue.

The 217 citations published in this issue of the Abstract Section cover the period January 1974 through June 1974. The Index Section contains references to the 2653 citations covering the period May 1969 through June 1974.

ABSTRACT SECTION (SECTION 1)

The Abstract Section is divided into 34 subject categories (See Table of Contents for scope note of each category) under which are grouped appropriate NASA inventions. Each entry in the Abstract Section consists of STAR citation accompanied by an abstract and a key illustration taken from the patent or application for patent drawing. Entries are arranged in subject category in order of the ascending NASA Accession Number originally assigned in STAR to the invention. The range of NASA Accession Numbers within each issue is printed on the inside front cover.

Abstract Citation Data Elements: Each of the abstract citations has several data elements useful for identification and indexing purposes, as follows:

NASA Accession Number
NASA Case Number
Inventor's Name

Title of Invention
U.S. Patent Application Serial Number
U.S. Patent Number (for issued patents only)
U.S. Patent Office Classification Number(s)
(for issued patents only)

These data elements appear in the citation of the abstract as depicted in the Typical Citation and Abstract reproduced below and are also used in the several indexes.

TYPICAL CITATION AND ABSTRACT FROM

PATENT ABSTRACTS BIBLIOGRAPHY

NASA SPONSORED DOCUMENT

NASA ACCESSION NUMBER

TITLE

INVENTOR

NASA CASE NUMBER

US PATENT APPLICATION SERIAL NUMBER

ABSTRACT

N74-10975* Lockheed Missiles and Space Co., Sunnyvale, Calif. — SOURCE

WHOLE BODY MEASUREMENT SYSTEMS Patent

John S. Ogle, inventor (to NASA) Issued 6 Nov. 1973 5 p Filed 18 Nov. 1971 Supersedes N72-20105 (10 - 11, p 1433)

Sponsored by NASA

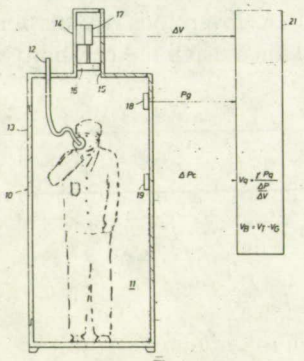
(NASA-Case-MSC-13972-1; US-Patent-3,769,834; — US PATENT NUMBER

US-Patent-Appl-SN-200040; US-Patent-Class-73-149; — U.S. PATENT OFFICE CLASSIFICATION NUMBER

US-Patent-Class-128-2S) Avail: US Patent Office CSCL 06B — COSATI CODE

A system for measuring the volume and volume variations of a human body under zero gravity conditions is disclosed. An enclosed chamber having a defined volume and arranged for receiving a human body is provided with means for infrasonically varying the volume of the chamber. The changes in volume produce resultant changes in pressure, and under substantially isentropic conditions, an isentropic relationship permits a determination of gas volume which, in turn, when related to total chamber volume permits a determination of the body volume. By comparison techniques, volume changes of a human independent of gravity conditions can be determined. — AVAILABILITY

Official Gazette of the U.S. Patent Office



KEY ILLUSTRATION

INDEX SECTION (SECTION 2)

The Index Section is divided into five indexes which are cross-indexed and are useful in locating a single invention or groups of inventions.

Each of the five indexes utilizes basic data elements: (1) Subject Category Number, (2) NASA Accession Number, and (3) NASA Case Number, in addition to other specific index terms.

Subject Index: Lists all inventions according to appropriate alphabetized technical term and indicates the related NASA Case Number, the Subject Category Number, and the NASA Accession Number.

Inventor Index: Lists all inventions according to alphabetized names of inventors and indicates the related NASA Case Number, the Subject Category Number, and the NASA Accession Number.

Source Index: Lists all inventions according to alphabetized source of invention (i.e., name of contractor or government installation where invention was made) and indicates the related NASA Case Number, the Subject Category Number, and the NASA Accession Number.

Number Index: Lists inventions in order of ascending (1) NASA Case Number, (2) U.S. Patent Application Serial Number, (3) U.S. Patent Classification Number, and (4) U.S. Patent Number and indicates the related Subject Category Number and the NASA Accession Number.

Accession Number Index: Lists all inventions in order of ascending NASA Accession Number and indicates the related Subject Category Number, the NASA Case Number, the U.S. Patent Application Serial Number, the U.S. Patent Classification Number, and the U.S. Patent Number.

HOW TO USE THIS PUBLICATION TO IDENTIFY NASA INVENTIONS

To identify one or more NASA inventions within a specific technical field or subject, several techniques are possible when using the flexibility incorporated into the NASA PAB.

(1) *Using Subject Category:* To identify all NASA inventions in any one of the 34 subject categories in this issue of NASA PAB, select the desired Subject Category in the Abstract Section and find the inventions abstracted thereunder. The abstracts are arranged in each Subject Category in order of the ascending Accession Number originally assigned in STAR to each invention.

(2) *Using Subject Index:* To identify all NASA inventions listed under a desired technical subject index term, (A) turn to the cumulative Subject Index in the latest issue of the Index Section and find the invention(s) listed under the desired technical subject term. (B) Note

the indicated Accession Number and the Subject Category Number. (C) Using the indicated Accession Number, turn to the inside front cover of the Index Section to determine which issue of the Abstract Section includes the Accession Number desired. (D) To find the abstract of the particular invention in the issue of the Abstract Section selected, (i) use the Subject Category Number to locate the Subject Category, and (ii) use the Accession Number to locate the desired invention within the Subject Category listing.

(3) *Using Patent Classification Index:* To identify all inventions covered by issued NASA patents (does not include applications for patent) within a desired Patent Office Classification, (A) turn to the Patent Classification Number in the Number Index of Section 2 and find the associated invention(s), and (B) follow the instructions outlined in (2)(B), and (D) above.

PUBLIC AVAILABILITY OF COPIES OF PATENTS AND PATENT APPLICATIONS

Copies of U.S. patents may be purchased directly from the U.S. Patent Office, Washington, D.C. 20231, for fifty cents a copy.

Copies of pending NASA applications for patent abstracted in NASA PAB are sold by the National Technical Information Service, Springfield, Virginia 22151, at the price shown in the citation. Microfiche are sold at the established unit price of $1.45. When ordering copies of an application for patent from NTIS, the U.S. Patent Application Serial Number listed in the index or shown in the citation for each abstract should be used to identify the desired application for patent.

LICENSES FOR COMMERCIAL USE: INQUIRIES AND APPLICATIONS FOR LICENSE

NASA inventions, abstracted in NASA PAB, are available for nonexclusive or exclusive licensing in accordance with the NASA Patent Licensing Regulations. It is significant that all licenses for NASA inventions shall be by express written instruments and that no license will be granted or implied in a NASA invention except as provided in the NASA Patent Licensing Regulations.

Inquiries concerning the NASA Patent Licensing Program or the availability of licenses for the commercial use of NASA-owned inventions covered by U.S. patents or pending applications for patent should be forwarded to the NASA Patent Counsel of the NASA installation having cognizance of the specific invention, or the Assistant General Counsel for Patent Matters, Code GP, National Aeronautics and Space Administration, Washington, D.C. 20546. Inquiries should refer to the NASA Case Number, the Title of the Invention, and the U.S. Patent Number or the U.S. Application Serial Number assigned to the invention as shown in NASA PAB.

The NASA Patent Counsel having cognizance of the invention is determined by the first three letters or prefix of the NASA Case Number assigned to the invention. The addresses of NASA Patent Counsels are listed alongside the NASA Case Number prefix letters in the following table. Formal application of license must be submitted on the NASA Form, Application for NASA Patent License, which is available upon request from any NASA Patent Counsel.

NASA Case Number Prefix Letters	Address of Cognizant NASA Patent Counsel
ARC-xxxxx XAR-xxxxx	Ames Research Center Mail Code: 200-11A Moffett Field, California 94035
ERC-xxxxx XER-xxxxx HQN-xxxxx XHQ-xxxxx	NASA Headquarters Mail Code: GP Washington, D.C. 20546
GSC-xxxxx XGS-xxxxx	Goddard Space Flight Center Mail Code: 204 Greenbelt, Maryland 20771
KSC-xxxxx XKS-xxxxx	John F. Kennedy Space Center Mail Code: AD-PAT Kennedy Space Center, Florida 32899
LAR-xxxxx XLA-xxxxx	Langley Research Center Mail Code: 456 Langley Station Hampton, Virginia 23365
LEW-xxxxx XLE-xxxxx	Lewis Research Center Mail Code: 500-311 21000 Brookpark Road Cleveland, Ohio 44135
MSC-xxxxx XMS-xxxxx	Lyndon B. Johnson Space Center Mail Code: AM Houston, Texas 77058
MFS-xxxxx XMF-xxxxx	George C. Marshall Space Flight Center Mail Code: CC01 Huntsville, Alabama 35812
NPO-xxxxx XNP-xxxxx FRC-xxxxx XFR-xxxxx WOO-xxxxx	NASA Pasadena Office Mail Code: 180–601 4800 Oak Grove Drive Pasadena, California 91103

NASA PATENT LICENSING REGULATIONS

The NASA Domestic Patent Licensing Regulations (14 C.F.R. 1245.2) are reproduced on the following pages. Selected NASA inventions are also available for licensing in countries other than the United States in accordance with the NASA Foreign Patent Licensing Regulation (14 C.F.R. 1245.4), a copy of which is available from any NASA Patent Counsel.

PATENT LICENSING REGULATIONS

Title 14—AERONAUTICS AND SPACE

Chapter V—National Aeronautics and Space Administration

PART 1245—PATENTS

Subpart 2—Patent Licensing Regulations

1. Subpart 2 is revised in its entirety as follows:

Sec.

AUTHORITY: The provisions of this Subpart 2 issued under 42 U.S.C. 2457, 2473(b)(3).

§ 1245.200 Scope of subpart.

This Subpart 2 prescribes the terms, conditions, and procedures for licensing inventions covered by U.S. patents and patent applications for which the Administrator of the National Aeronautics and Space Administration holds title on behalf of the United States.

§ 1245.201 Definitions.

For the purpose of this subpart, the following definitions apply:

(a) "Invention" means an invention covered by a U.S. patent or patent application for which the Administrator of NASA holds title on behalf of the United States and which is designated by the Administration as appropriate for the grant of license(s) in accordance with this subpart.

(b) "To practice an invention" means to make or have made, use or have used, sell or have sold, or otherwise dispose of according to law any machine, article of manufacture or composition of matter physically embodying the invention, or to use or have used the process or method comprising the invention.

(c) "Practical application" means the manufacture in the case of a composition of matter or product, the use in the case of a process, or the operation in the case of a machine, under such conditions as to establish that the invention is being utilized and that its benefits are reasonably accessible to the public.

(d) "Special invention" means any invention designated by the NASA Assistant General Counsel for Patent Matters to be subject to short-form licensing procedures. An invention may be designated as a special invention when a determination is made that:

(1) Practical application has occurred and is likely to continue for the life of the patent and for which an exclusive license is not in force, or

(2) The public interest would be served by the expeditious granting of a nonexclusive license for practice of the invention by the public.

(e) The "Administrator" means the Administrator of the National Aeronautics and Space Administration, or his designee.

(f) "Government" means the Government of the United States of America.

(g) The "Inventions and Contributions Board" means the NASA Inventions and Contributions Board established by the Administrator of NASA within the Administration in accordance with section 305 of the National Aeronautics and Space Act of 1958 as amended (42 U.S.C. 2457).

§ 1245.202 Basic considerations.

(a) Much of the new technology resulting from NASA sponsored research and development in aeronautical and space activities has application in other fields. NASA has special authority and responsibility under the National Aeronautics and Space Act of 1958, as amended (42 U.S.C. 2451), to provide for the widest practical dissemination and utilization of this new technology. In addition, NASA has been given unique requirements to protect the inventions resulting from NASA activities and to promulgate licensing regulations to encourage commercial use of these inventions.

(b) NASA-owned inventions will best serve the interests of the United States when they are brought to practical application in the shortest time possible. Although NASA encourages the nonexclusive licensing of its inventions to promote competition and achieve their widest possible utilization, the commercial development of certain inventions calls for a substantial capital investment which private manufacturers may be unwilling to risk under a nonexclusive license. It is the policy of NASA to seek exclusive licensees when such licenses will provide the necessary incentive to the licensee to achieve early practical application of the invention.

(c) The Administrator, in determining whether to grant an exclusive license, will evaluate all relevant information submitted by applicants and all other persons and will consider the necessity for further technical and market development of the invention, the capabilities of prospective licensees, their proposed plans to undertake the required investment and development, the impact on competitors, and the benefits of the license to the Government and to the public. Preference for exclusive license shall be given to U.S. citizens or companies who intend to manufacture or use, in the case of a process, the invention in the United States of America, its territories and possessions. Consideration may also be given to assisting small businesses and minority business enterprises, as well as economically depressed, low income and labor surplus areas.

(d) All licenses for inventions shall be by express written instruments. No license shall be granted either expressly or by implication, for a NASA invention except as provided for in §§ 1245.203 and 1245.204 and in any existing or future treaty or agreement between the United States and any foreign government.

(e) Licenses for inventions covered by NASA-owned foreign patents and patent applications shall be granted in accordance with the NASA Foreign Patent Licensing Regulations (§ 1245.4).

§ 1245.203 Licenses for practical application of inventions.

(a) *General.* As an incentive to encourage practical application of inventions, licenses will be granted to responsible applicants according to the circumstances and conditions set forth in this section.

(b) *Nonexclusive licenses.* (1) Each invention will be made available to responsible applicants for nonexclusive, revocable licensing in accordance with § 1245.206, consistent with the provisions of any existing exclusive license.

(2) The duration of the license shall be for a period as specified in the license.

(3) The license shall require the licensee to achieve the practical application of the invention and to then practice the invention for the duration of the license.

(4) The license may be granted for all or less than all fields of use of the invention and throughout the United States of America, its territories and possessions, Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(5) The license shall extend to the subsidiaries and affiliates of the licensee and shall be nonassignable without approval of the Administrator, NASA, except to the successor of that part of the licensee's business to which the invention pertains.

(c) *Short-form nonexclusive licenses.* A nonexclusive, revocable license for a special invention, as defined in § 1245.201 (d), shall be granted upon written request, to any applicant by the Patent Counsel of the NASA installation having cognizance of the invention.

(d) *Exclusive licenses.* (1) A limited exclusive license may be granted on an invention available for such licensing provided that:

(i) The Administrator has determined that: (*a*) The invention has not been brought to practical application by a nonexclusive licensee in the fields of use or in the geographical locations covered by the application for the exclusive license, (*b*) practical application of the invention in the fields of use or geographical locations covered by the application for the exclusive license is not likely to be achieved expeditiously by the further funding of the invention by the Government or under a nonexclusive license requested by any applicant pursuant to these regulations, and (*c*) the exclusive license will provide the necessary incentive to the licensee to achieve the practical application of the invention; and

(ii) Either a notice pursuant to

§ 1245.205 listing the invention as available for licensing has been published in the FEDERAL REGISTER for at least 9 months; or a patent covering the invention has been issued for at least 6 months. However, a limited exclusive license may be granted prior to the periods specified above if the Administrator determines that the public interest will best be served by the earlier grant of an exclusive license.

(2) The license may be granted for all or less than all fields of use of the invention, and throughout the United States of America, its territories and possessions, Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(3) The exclusive period of the license shall be negotiated, but shall be for less than the terminal portion of the patent, and shall be related to the period necessary to provide a reasonable incentive to invest the necessary risk capital.

(4) The license shall require the licensee to practice the invention within a period specified in the license and then to achieve practical application of the invention.

(5) The license shall require the licensee to expend a specified minimum sum of money and/or to take other specified actions, within indicated period(s) after the effective date of the license, in an effort to achieve practical application of the invention.

(6) The license shall be subject to at least an irrevocable royalty-free right of the Government of the United States to practice and have practiced the invention throughout the world by or on behalf of the Government of the United States and on behalf of any foreign government pursuant to any existing or future treaty or agreement with the United States.

(7) The license may reserve to the Administrator, NASA, under the following circumstances, the right to require the granting of a sublicense to responsible applicant(s) on terms that are considered reasonable by the Administrator, taking into consideration the current royalty rates under similar patents and other pertinent facts: (i) To the extent that the invention is required for public use by Government regulation, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other purposes stipulated in the license.

(8) The license shall be nontransferable except to the successor of that part of the licensee's business to which the invention pertains.

(9) Subject to the approval of the Administrator, the licensee may grant sublicenses under the license. Each sublicense granted by an exclusive licensee shall make reference to and shall provide that the sublicense is subject to the terms of the exclusive license including the rights retained by the Government under the exclusive license. A copy of each sublicense shall be furnished to the Administrator.

(10) The license may be subject to such other reservations as may be in the public interest.

§ 1245.204 Other licenses.

(a) *License to contractor.* There is hereby granted to the contractor reporting an invention made in the performance of work under a contract of NASA in the manner specified in section 305(a) (1) or (2) of the National Aeronautics and Space Act of 1958 as amended (42 U.S.C. 2457(a) (1) or (2)), a revocable, nonexclusive, royalty-free license for the practice of such invention, together with the right to grant sublicenses of the same scope to the extent the contractor was legally obligated to do so at the time the contract was awarded. Such license and right is nontransferable except to the successor of that part of the contractor's business to which the invention pertains.

(b) *Miscellaneous licenses.* Subject to any outstanding licenses, nothing in this subpart 2 shall preclude the Administrator from granting other licenses for inventions, when he determines that do so would provide for an equitable distribution of rights. The following exemplify circumstances wherein such licenses may be granted:

(1) In consideration of the settlement of an interference;

(2) In consideration of a release of a claim of infringement; or

(3) In exchange for or as part of the consideration for a license under adversely held patent(s).

§ 1245.205 Publication of NASA inventions available for license.

(a) A notice will be perodically published in the FEDERAL REGISTER listing inventions available for licensing. Abstracts of the inventions will also be published in the NASA Scientific and Technical Aerospace Reports (STAR) and other NASA publications.

(b) Copies of pending patent applications for inventions abstracted in STAR may be purchased from the National Technical Information Service, Springfield, Va. 22151.

§ 1245.206 Application for nonexclusive license.

(a) *Submission of application.* An application for nonexclusive license under § 1245.203(b) or a short-form nonexclusive license for special inventions under § 1245.203(c) shall be addressed to the NASA Patent Counsel of the NASA installation having cognizance over the NASA invention for which a license is desired or to the NASA Assistant General Counsel for Patent Matters.

(b) *Contents of an application for nonexclusive license.* An application for nonexclusive license under § 1245.203(b) shall include:

(1) Identification of invention for which license is desired, including the NASA patent case number, patent application serial number of patent number, title and date, if known;

(2) Name and address of the person, company or organization applying for license and whether the applicant is a U.S. citizen or a U.S. corporation;

(3) Name and address of representative of applicant to whom correspondence should be sent;

(4) Nature and type of applicant's business;

(5) Number of employees;

(6) Purpose for which license is desired;

(7) A statement that contains the applicant's best knowledge of the extent to which the invention is being practiced by private industry and the Government;

(8) A description of applicant's capability and plan to undertake the development and marketing required to achieve the practical application of the invention, including the geographical location where the applicant plans to manufacture or use, in the case of a process, the invention; and

(9) A statement indicating the minimum term of years the applicant desires to be licensed.

(c) *Contents of an application for a short-form nonexclusive license.* An application for a short-form nonexclusive license under § 1245.203(c) for a special invention shall include:

(1) Identification of invention for which license is desired, including the NASA patent case number, patent application serial number or patent number, title and date, if known;

(2) Name and address of company or organization applying for license; and

(3) Name and address of representative of applicant to whom correspondence should be sent.

§ 1245.207 Application for exclusive license.

(a) *Submission of application.* An application for exclusive license under § 1245.203(d) may be submitted to NASA at any time. An application for exclusive license shall be addressed to the NASA Assistant General Counsel for Patent Matters.

(b) *Contents of an application for exclusive license.* In addition to the requirements set forth in § 1245.206(b), the application for an exclusive license shall include:

(1) Applicant's status, if any, in any one or more of the following categories:

(i) Small business firm;

(ii) Minority business enterprise;

(iii) Location in a surplus labor area;

(iv) Location in a low-income urban area; and

(v) Location in an area designed by the Government as economically depressed.

(2) A statement indicating the time, expenditure, and other acts which the applicant considers necessary to achieve practical application of the invention, and the applicant's offer to invest that sum and to perform such acts if the license is granted;

(3) A statement whether the applicant would be willing to accept a license for all or less than all fields of use of the invention throughout the United States of America, its territories and possessions, Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(4) A statement indicating the amount of royalty fees or other consideration, if any, the applicant would be willing to pay the Government for the exclusive license; and

(5) Any other facts which the applicant believes to show it to be in the interests of the United States of America for the Administrator to grant an exclusive license rather than a nonexclusive li-

cense and that such an exclusive license should be granted to the applicant.

§ 1245.208 Processing applications for license.

(a) *Initial review.* Applications for nonexclusive and exclusive licenses under §§ 1245.206 and 1245.207 will be reviewed by the Patent Counsel of the NASA installation having cognizance for the invention and the NASA Assistant General Counsel for Patent Matters, to determine the conformity and appropriateness of the application for license and the availability of the specific invention for the license requested. The Assistant General Counsel for Patent Matters will forward all applications for license conforming to §§ 1245.206(b) and 1245.207(b) to the NASA Inventions and Contributions Board when the invention is available for consideration of the requested license. Prior to forwarding applications for exclusive licenses to the Inventions and Contributions Board, notice in writing will be given to each nonexclusive licensee for the specific invention advising of the receipt of the application for the exclusive license and providing each nonexclusive licensee with a 30-day period for submitting either evidence that practical application of the invention has occurred or is about to occur or, an application for an exclusive license for the invention.

(b) *Recommendations of Inventions and Contributions Board.* The Inventions and Contributions Board shall, in accordance with the basic considerations set forth in §§ 1245.202 and 1245.203, evaluate all applications for license forwarded by the Assistant General Counsel for Patent Matters. Based upon the facts presented to the Inventions and Contributions Board in the application and any other facts in its possession, the Inventions and Contributions Board shall recommend to the Administrator: (1) Whether a nonexclusive or exclusive license should be granted, (2) the identity of the licensee, and (3) any special terms or conditions of the license.

(c) *Determination of Administrator and grant of nonexclusive licenses.* The Administrator shall review the recommendations of the Inventions and Contributions Board and shall determine whether to grant the nonexclusive license as recommended by the Board. If the Administrator determines to grant the license, the license will be granted upon the negotiation of the appropriate terms and conditions of the Office of General Counsel.

(d) *Determination of Administrator and grant of exclusive licenses*—(1) *Notice.* If the Administrator determines that the best interest of the United States will be served by the granting of an exclusive license in accordance with the basic considerations set forth in §§ 1245.202 and 1245.203, a notice shall be published in the FEDERAL REGISTER announcing the intent to grant the exclusive license, the identification of the invention, special terms or conditions of the proposed license, and a statement that NASA will grant the exclusive license unless within 30 days of the publication of such notice the Inventions and Contributions Board receives in writing any of the following together with supporting documentation:

(i) A statement from any person setting forth reasons why it would not be in the best interest of the United States to grant the proposed exclusive license; or

(ii) An application for a nonexclusive license under such invention, in accordance with § 1245.206(b), in which applicant states that he has already brought or is likely to bring the invention to practical application within a reasonable period.

The Inventions and Contributions Board shall, upon receipt of a written request within the 30 days' notice period, grant an extension of 30 days for the submission of the documents designated above.

(2) *Recommendation of Inventions and Contributions Board.* Upon the expiration of the period required by subparagraph (1) of this paragraph, the Board shall review all written responses to the notice and shall then recommend to the Administrator whether to grant the exclusive license as the Board initially recommended or whether a different form of license, if any, should instead be granted.

(3) *Grant of exclusive licenses.* The Administrator shall review the Board's recommendation and shall determine if the interest of the United States would best be served by the grant of an exclusive license as recommended by the Board. If the Administrator determines to grant the exclusive license, the license will be granted upon the negotiation of the appropriate terms and conditions by the Office of General Counsel.

§ 1245.209 Royalties and fees.

(a) Normally, a nonexclusive license for the practical application of an invention granted to a U.S. citizen or company will not require the payment of royalties; however, NASA may require other consideration.

(b) An exclusive license for an invention may require the payment of royalties, fees or other consideration when the licensing circumstances and the basic considerations in § 1245.202, considered together, indicate that it is in the public interest to do so.

§ 1245.210 Reports.

A license shall require the licensee to submit periodic reports of his efforts to work the invention. The reports shall contain information within his knowledge, or which he may acquire under normal business practice, pertaining to the commercial use that is being made of the invention and such other information which the Administrator may determine pertinent to the licensing program and which is specified in the license.

§ 1245.211 Revocation of licenses.

(a) Any license granted pursuant to § 1245.203 may be revoked, either in part or in its entirety, by the Administrator if in his opinion the licensee at any time shall fail to use adequate efforts to bring to or achieve practical application of the invention in accordance with the terms of the license, or if the licensee at any time shall default in making any report required by the license, or shall make any false report, or shall commit any breach of any covenant or agreement therein contained, and shall fail to remedy any such default, false report, or breach within 30 days after written notice, or if the patent is deemed unenforceable either by the Attorney General or a final decision of a U.S. court.

(b) Any license granted pursuant to § 1245.204(a) may be revoked, either in part or in its entirety, by the Administrator if in his opinion such revocation is necessary to achieve the earliest practical application of the invention pursuant to an application for exclusive license submitted in accordance with § 1245.207, or the licensee at any time shall breach any covenant or agreement contained in the license, and shall fail to remedy any such breach within 30 days after written notice thereof.

(c) Before revoking any license granted pursuant to this Subpart 2 for any cause, there will be furnished to the licensee a written notice of intention to revoke the license, and the licensee will be allowed 30 days after such notice in which to appeal and request a hearing before the Inventions and Contributions Board on the question of revocation. After a hearing, the Inventions and Contributions Board shall transmit to the Administrator the record of proceedings, its findings of fact, and its recommendation whether the license should be revoked either in part or in its entirety. The Administrator shall review the recommendation of the Board and determine whether to revoke the license in part or in its entirety. Revocation of a license shall include revocation of all sublicenses which have been granted.

§ 1245.212 Appeals.

Any person desiring to file an appeal pursuant to § 1245.211(c) shall address the appeal to Chairman, Inventions and Contributions Board. Any person filing an appeal shall be afforded an opportunity to be heard before the Inventions and Contributions Board, and to offer evidence in support of his appeal. The procedures to be followed in any such matter shall be determined by the Administrator. The Board shall make findings of fact and recommendations with respect to disposition of the appeal. The decision on the appeal shall be made by the Administrator, and such decision shall be final and conclusive, except on questions of law, unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence.

§ 1245.213 Litigation.

An exclusive licensee shall be granted the right to sue at his own expense any party who infringes the rights set forth in his license and covered by the licensed patent. The licensee may join the Government, upon consent of the Attorney General, as a party complainant in such suit, but without expense to the Government and the licensee shall pay costs and any final judgment or decree that may be rendered against the Govern-

ment in such suit. The Government shall also have an absolute right to intervene in any such suit at its own expense. The licensee shall be obligated to promptly furnish to the Government, upon request, copies of all pleadings and other papers filed in any such suit and of evidence adduced in proceedings relating to the licensed patent including, but not limited to, negotiations for settlement and agreements settling claims by a licensee based on the licensed patent, and all other books, documents, papers, and records pertaining to such suit. If, as a result of any such litigation, the patent shall be declared invalid, the licensee shall have the right to surrender his license and be relieved from any further obligation thereunder.

§ 1245.214 Address of communications.

(a) Communications to the Assistant General Counsel for Patent Matters in accordance with §§ 1245.206 and 1245.207 and requests for information concerning licenses for NASA inventions should be addressed to the Assistant General Counsel for Patent Matters, Code GP, National Aeronautics and Space Administration, Washington, D.C. 20546.

(b) Communications to the Inventions and Contributions Board in accordance with §§ 1245.208, 1245.211, and 1245.212 should be addressed to Chairman, Inventions and Contributions Board, National Aeronautics and Space Administration, Washington, D.C. 20546.

Effective date. The regulations set forth in this subpart 2 are effective April 1, 1972.

JAMES C. FLETCHER,
Administrator.

TABLE OF CONTENTS

Section 1 • Abstracts

Subject Categories

Abstracts in the bibliography are grouped under the following categories:

Section 2 • Indexes

JULY 1974 (Supplement 5)

NASA Patent Abstracts Bibliography

A Semiannual Publication of the National Aeronautics and Space Administration

01 AERODYNAMICS

Includes aerodynamics of bodies, combinations, internal flow in ducts and turbo machinery; wings, rotors, and control surfaces. For applications see: 02 Aircraft and 31 Space Vehicles. For related information see also: 12 Fluid Mechanics; and 33 Thermodynamics and Combustion.

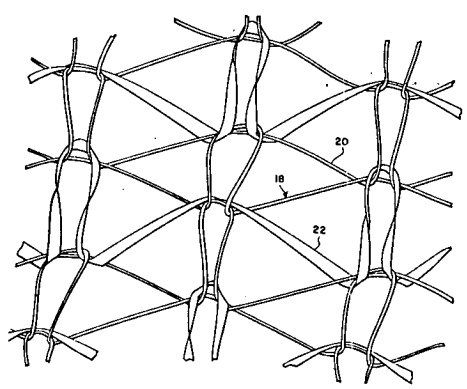
No abstracts in this subject category.

02 AIRCRAFT

Includes fixed-wing airplanes, helicopters, gliders, balloons, ornithopters, etc; and specific types of complete aircraft (e.g., ground effect machines, STOL, and VTOL); flight tests; operating problems (e.g., sonic boom); safety and safety devices; economics; and stability and control. For basic research see: 01 Aerodynamics. For related information see also: 31 Space Vehicles; and 32 Structural Mechanics.

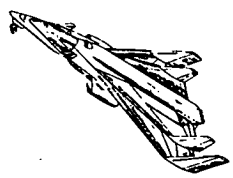
N74-10034* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
LIGHTWEIGHT, VARIABLE SOLIDITY KNITTED PARACHUTE FABRIC Patent
Frederick R. Matthews, Jr. and Erskine C. White, inventors (to NASA) Issued 9 Oct. 1973 6 p Filed 23 Dec. 1971 Supersedes N72-21004 (10 - 12, p 1553)
(NASA-Case-LAR-10776-1; US-Patent-3,764,097; US-Patent-Appl-SN-211332; US-Patent-Class-244-145) Avail: US Patent Office CSCL 11E

A parachute fabric for aerodynamic decelerator applications is described. The fabric will permit deployment of the decelerator at high altitudes and low density conditions. The fabric consists of lightweight, highly open, circular knitted parachute fabric with ribbon-like yarns to assist in air deflection.
Official Gazette of the U.S. Patent Office



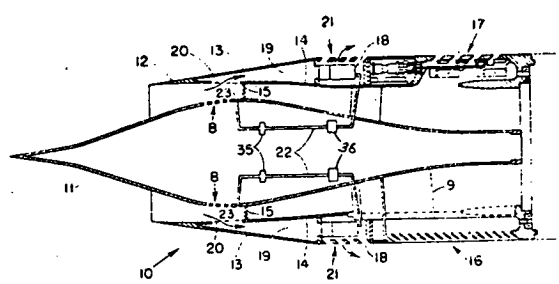
N74-10907* Lockheed-California Co., Burbank.
MULTISTAGE AEROSPACE CRAFT Patent
Donald Lee Kelly, inventor (to NASA) Issued 16 Oct. 1973 1 p Filed 20 Feb. 1964 Sponsored by NASA
(NASA-Case-XMF-02263; US-Patent-Des-228,688; US-Patent-Appl-SN-78766; US-Patent-Class-D71-1) Avail: US Patent Office CSCL 01C

A conceptual design of a multi-stage aerospace craft is presented. Two perspective views of the vehicle are developed to show the two component configuration with delta wing, four vertical tail surfaces, tricycle landing gear, and two rocket exhaust nozzles at the rear of the fuselage. Engines for propulsion in the atmosphere are mounted on the fuselage in front of the wing root attachment.
P.N.F.



N74-20646* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
AIRFLOW CONTROL SYSTEM FOR SUPERSONIC INLETS Patent
Glenn A. Mitchell, inventor (to NASA) and Bobby W. Sanders Issued 26 Mar. 1974 6 p Filed 11 Jun. 1971 Supersedes N71-34017 (09 - 21, p 3375)
(NASA-Case-LEW-11188-1; US-Patent-3,799,475; US-Patent-Appl-SN-152328; US-Patent-Class-244-53B; US-Patent-Class-137-15.1; US-Patent-Class-137-15.2) Avail: US Patent Office CSCL 01B

In addition to fixed and variable bleed devices provided for controlling the position of a terminal shock wave in a supersonic inlet, a plurality of free piston valves are disposed around the periphery of a cowling of a supersonic engine inlet. The free piston valves are disposed in dump passageways, each of which begin at a bleed port in the cowling that is located in the throat region of the inlet, where the diameter of the centerbody is near maximum, and terminates at an o, ening in the cowling adjacent a free piston valve. Each valve is controlled by reference pressure.
Official Gazette of the U.S. Patent Office

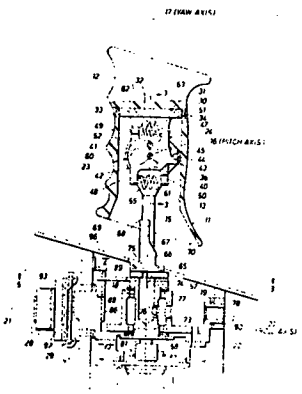


03 AUXILIARY SYSTEMS

Includes fuel cells, energy conversion cells, and solar cells; auxiliary gas turbines; hydraulic, pneumatic and electrical systems; actuators; and inverters. For related information see also: 09 Electronic Equipment; 22 Nuclear Engineering; and 28 Propulsion Systems.

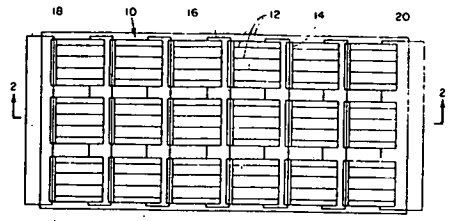
N74-10942* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
SOLID STATE CONTROLLER THREE AXES CONTROLLER Patent
Charles L. Bailey, Jr., inventor (to NASA) Issued 6 Nov. 1973 10 p Filed 15 Mar. 1973 Supersedes N73-20041 (11 - 11, p 1237)
(NASA-Case-MSC-12394-1; US-Patent-3,771,037; US-Patent-Appl-SN-341662; US-Patent-Class-318-580; US-Patent-Class-318-628; US-Patent-Class-244-83) Avail: US Patent Office CSCL 13I

The reported flight controller features a handle grip which is mounted on a longitudinally extending control element. The handle grip is pivotally mounted on the control element about a pitch axis which is perpendicular to the longitudinal axis through the control element. The pivotal mounting includes a resilient force mounting mechanism which centers the grip relative to the control element. Rotation of the handle grip produces a direct rotation of a transducer element in a transducer which provides an electrical indication of the rotative movement about three mutually perpendicular axes.
Official Gazette of the U.S. Patent Office



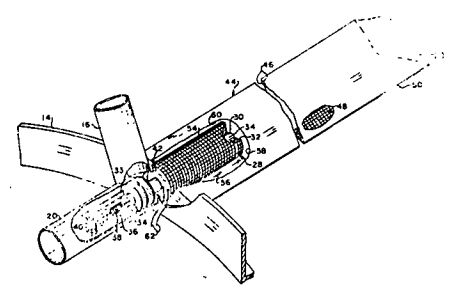
N74-14784* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
METHOD OF MAKING SILICON SOLAR CELL ARRAY Patent
Americo F. Forestieri, Jacob D. Broder, and Daniel T. Bernatowicz, inventors (to NASA) Issued 25 Dec. 1973 4 p Filed 26 Oct. 1970 Supersedes N71-29048 (09 - 16, p 2541)
(NASA-Case-LEW-11069-1; US-Patent-3,780,424; US-Patent-Appl-SN-83816; US-Patent-Class-29-572; US-Patent-Class-136-89; US-Patent-Class-29-588) Avail: US Patent Office CSCL 10C

A heat sealable transparent plastic film, such as a flourinated ethylene propylene copolymer, is used both as a cover material and as an adhesive for mounting a solar cell array to a flexible substrate.
Official Gazette of the U.S. Patent Office



N74-18726*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
THERMOELECTRIC POWER SYSTEM Patent Application
Ambrose W. Byrd, inventor (to NASA) Filed 19 Mar. 1974 10 p
(NASA-Case-MFS-22002-1; US-Patent-Appl-SN-452769) Avail: NTIS HC $4.00 CSCL 10A

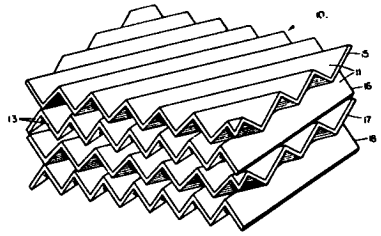
A thermoelectric power system adaptable for use in outer space is reported in which a nuclear reactor heats a working fluid, which in turn supplies heat to thermoelectric generators spaced about a ring shaped support. A first heat pipe is employed to couple heat between the hot fluid and hot junction of the thermoelectric element of each generator, and a second heat pipe couples heat away from the cold junction of each thermoelectric element. Each of the second heat pipes are elongated flexible units adapted to be folded upon launch of the system of a space vehicle and thereafter extended in space to provide a substantial area of radiation of heat to be discharged.
NASA



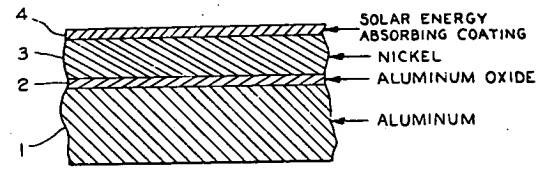
N74-19692* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
METHOD OF MAKING POROUS CONDUCTIVE SUPPORTS FOR ELECTRODES Patent
Glenn R. Schaer, inventor (to NASA) (Battelle Memorial Inst., Columbus, Ohio) Issued 18 Sep. 1973 6 p Filed 22 Mar. 1972 Sponsored by NASA
(NASA-Case-GSC-11367-1; US-Patent-3,759,747; US-Patent-Appl-SN-236985; US-Patent-Class-136-36) Avail: US Patent Office CSCL 10C

Porous conductive supports for electrochemical cell electrodes are made by electroforming thin corrugated nickel foil, and by stacking pieces of the corrugated foil alternatively with pieces of thin flat nickel foil. Corrugations in successive corrugated pieces are oriented at different angles. Adjacent pieces of foil

are bonded by heating in a hydrogen atmosphere and then cutting the stack in planes perpendicular to the foils.
Official Gazette of the U.S. Patent Office

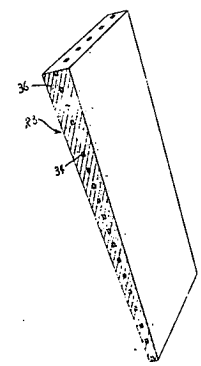


reported that consists of a metallic substrate, a layer of bright metallic material carried on the substrate, and a solar thermal energy absorbing coating carried on the bright metallic material. A layer of zinc is interposed between the metal substrate and the layer of bright material, or the metallic substrate can be anodized for receiving the layer of bright metallic material. Also disclosed is the method for producing the coating which selectively absorbs solar thermal energy. NASA



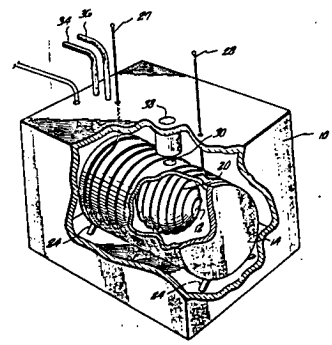
N74-19693* National Aeronautics and Space Administration. Pasadena Office, Calif.
STORAGE BATTERY COMPRISING NEGATIVE PLATES OF A WEDGE SHAPED CONFIGURATION Patent
Richard S. Bogner (ESB, Inc., Raleigh, N. C.) and Charles D. Farris, inventors (to NASA) (ESB, Inc., Raleigh, N. C.) Issued 5 Feb. 1974 6 p Filed 22 Feb. 1972 Supersedes N72-22048 (10 - 13, p 1695) Sponsored by NASA Prepared for JPL
(NASA-Case-NPO-11806-1; US-Patent-3,790,409; US-Patent-Appl-SN-228163; US-Patent-Class-136-20; US-Patent-Class-136-30) Avail: US Patent Office CSCL 10C

An improved silver-zinc battery particularly suited for use in an environment where battery operation is subjected to multiple charge/discharge cycling over extended periods is described. The battery seperator system, containing a highly absorbent material continguous with the surfaces of the plates and multiple semi-permeable membranes interposed between the plates, is also characterized. Official Gazette of the U.S. Patent Office



N74-19701*# National Aeronautics and Space Administration. Pasadena Office, Calif.
HEAT OPERATED CRYOGENIC ELECTRICAL GENERATOR Patent Application
Taylor G. Wang (JPL), Melvin M. Saffre, and Daniel D. Elleman, inventors (to NASA) Filed 1 Apr. 1974 19 p
(Contract NAS7-100)
(NASA-Case-NPO-13303-1; US-Patent-Appl-SN-457295) Avail: NTIS HC $4.00 CSCL 10A

An electrical generator useful for providing electrical power in deep space, is disclosed. The generator utilizes liquid helium conversion to and from a superfluid state to cause opposite directions of rotary motion for a rotor cell to move a magnetic field provided by a changed superconductive coil mounted on the exterior of the cell. An electrical conductor interacts with the moving magnetic field provided by the superconductive coil and thereby generates electrical energy. A heat control arrangement causes the liquid helium to be partially converted to and from a superfluid state. NASA



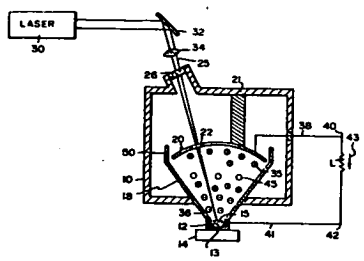
N74-19700*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
A PANEL FOR SELECTIVELY ABSORBING SOLAR THERMAL ENERGY AND THE METHOD FOR MANUFACTURING THE PANEL Patent Application
James R. Lowery, inventor (to NASA) Filed 5 Apr. 1974 21 p
(NASA-Case-MFS-22562-1; US-Patent-Appl-SN-458484) Avail: NTIS HC $4.25 CSCL 10A

A panel for selectively absorbing solar thermal energy is

N74-19702*# National Aeronautics and Space Administration. Pasadena Office, Calif.
ELECTRIC POWER GENERATION SYSTEM DIRECTLY FROM LASER POWER Patent Application
Katsunori Shimada, inventor (to NASA) (JPL) Filed 27 Mar. 1974 17 p
(Contract NAS7-100)
(NASA-Case-NPO-13308-1; US-Patent-Appl-SN-455164) Avail: NTIS HC $4.00 CSCL 10A

A system is reported in which laser power is directly converted into electric power. Liquid cesium is ionized by a laser beam

with a collector spaced apart from the cesium to collect either the cesium ions or free electrons; thus, a potential difference between the collector and the cesium liquid is produced. NASA



04 BIOSCIENCES

Includes aerospace medicine, exobiology, radiation effects on biological systems; physiological and psychological factors. For related information see also: 05 Biotechnology.

N74-13807*# Agricultural Research Service, Berkeley, Calif. Western Regional Research Lab.

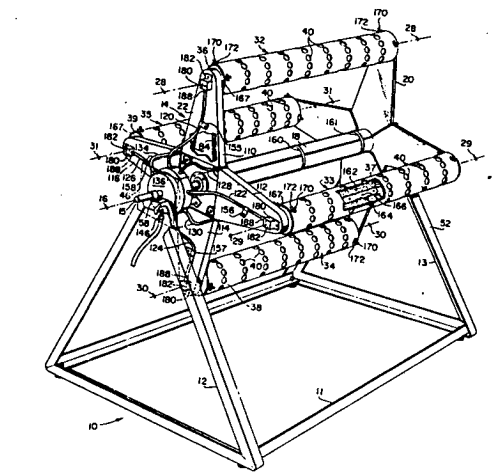
ROTARY PLANT GROWTH ACCELERATING APPARATUS Patent Application

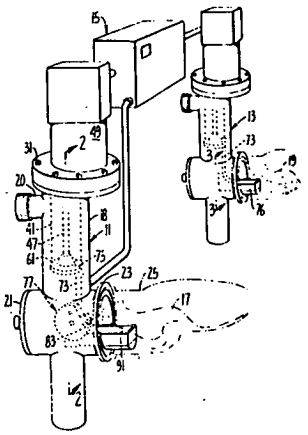
Richard R. Dedolph, inventor (to NASA) Filed 27 Dec. 1973 27 p Sponsored by NASA

(NASA-Case-ARC-10722-1; US-Patent-Appl-SN-428995) Avail: NTIS HC $3.50 CSCL 06C

A plant growth acceleration apparatus is reported wherein plants are grown in rotating beds driven in a planetary path about a primary axis so as to reduce the constraints of gravity upon the plants.

NASA





N74-15778* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

AUTOMATIC REAL-TIME PAIR-FEEDING SYSTEM FOR ANIMALS Patent

Henry A. Leon, James P. Connolly, Maurice J. Hitchman, and John E. Humbert, inventors (to NASA) Issued 1 Jan. 1974 8 p Filed 30 Nov. 1971 Supersedes N72-21052 (10 - 12, p 1559)

(NASA-Case-ARC-10302-1; US-Patent-3,782,334; US-Patent-Appl-SN-203271; US-Patent-Class-119-54; US-Patent-Class-119-51R; US-Patent-Class-119-52AF; US-Patent-Class-119-51.13; US-Patent-Class-119-51.5; US-Patent-Class-221-265) Avail: US Patent Office CSCL 06C

A pair feeding method and apparatus are provided for experimental animals wherein the amount of food consumed is immediately delivered to a normal or control animal so that there is a qualitative, quantitative and chronological correctness in the pair feeding of the two animals. This feeding mechanism delivers precisely measured amounts of food to a feeder. Circuitry is provided between master and slave feeders so that there is virtually no chance of a malfunction of the feeding apparatus, causing erratic results. Recording equipment is also provided so that an hourly record is kept of food delivery.

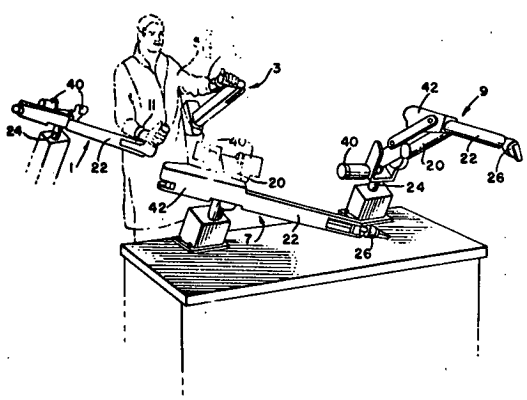
Official Gazette of the U.S. Patent Office

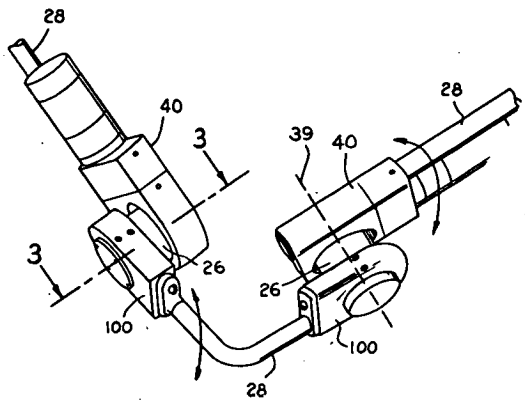
05 BIOTECHNOLOGY

Includes life support systems, human engineering; protective clothing and equipment; crew training and evaluation, and piloting. For related information see also: 04 Biosciences.

N74-10099*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
REMOTE MANIPULATOR SYSTEM Patent Application
D. A. Kugath, Herman T. Blaise, and Dan H. Dane, inventors (to NASA) Filed 11 Oct. 1973 28 p
(NASA-Case-MFS-22022-1; US-Patent-Appl-SN-405341) Avail: NTIS HC $3.50 CSCL 05H

A master-slave manipulator system with two master units is described. The system is controlled by the two arms and hands of an operator and two corresponding slave units. Both the master and the slave units have a first arm rotatably mounted to the floor at 30 deg from the vertical, a second arm pivoted to it and mounted for rotation, and a third arm pivoted to the second arm. The slave has a pivotally and rotatably mounted gripper unit while the master has a pivotally mounted unit with manual switch controls. The servomechanism system includes a solid state control circuit, and flat, helically wound, internal ribbons of wires. NASA



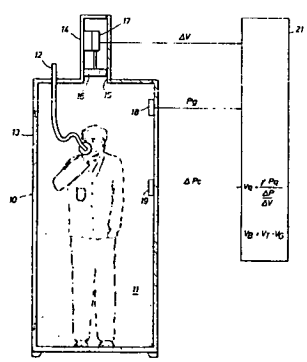


N74-10100*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
ORTHOTIC ARM JOINT Patent Application
Dan H. Dane, inventor (to NASA) Filed 4 Oct. 1973 14 p
(NASA-Case-MFS-21611-1; US-Patent-Appl-SN-403694) Avail: NTIS HC $3.00 CSCL 05H

An improved orthopedic (orthotic) arm joint that can be used in various joints of mechanical arms is presented. The arm joint includes a worm, which is coupled to an electric motor for rotating a worm gear carried within a rotatable housing. The worm gear is supported on a thrust bearing and the rotatable housing is supported on a radial thrust bearing. A bolt extends through the housing, bearings, and worm gear for securing the device together. A potentiometer extends through the bolt, and is coupled to the rotatable housing for rotating, so as to produce an electrical signal indicating the angular position of the rotatable housing. NASA

N74-10975* Lockheed Missiles and Space Co., Sunnyvale, Calif.
WHOLE BODY MEASUREMENT SYSTEMS Patent
John S. Ogle, inventor (to NASA) Issued 6 Nov. 1973 5 p Filed 18 Nov. 1971 Supersedes N72-20105 (10 - 11, p 1433) Sponsored by NASA
(NASA-Case-MSC-13972-1; US-Patent-3,769,834; US-Patent-Appl-SN-200040; US-Patent-Class-73-149; US-Patent-Class-128-2S) Avail: US Patent Office CSCL 06B

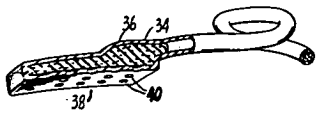
A system for measuring the volume and volume variations of a human body under zero gravity conditions is disclosed. An enclosed chamber having a defined volume and arranged for receiving a human body is provided with means for infrasonically varying the volume of the chamber. The changes in volume produce resultant changes in pressure, and under substantially isentropic conditions, an isentropic relationship permits a determination of gas volume which, in turn, when related to total chamber volume permits a determination of the body volume. By comparison techniques, volume changes of a human independent of gravity conditions can be determined.
Official Gazette of the U.S. Patent Office



N74-11900*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
ULTRA-FLEXIBLE BIOMEDICAL ELECTRODES AND WIRES Patent Application
Salvadore A. Rositano, inventor (to NASA) Filed 13 Jul. 1973 19 p

(NASA-Case-ARC-10268-2; US-Patent-Appl-SN-379048) Avail: NTIS HC $3.00 CSCL 06B

A flexible, stretchable biomedical electrode and wire connector which is designed for use by physicians, medical technicians and researchers to connect an electric instrument to the body is described. The electrode and wire connector comprise a soft flexible elastomer which has been loaded with a conductive metallic powder to render it conductive. An important variation of the invention includes an insulating layer over the back and face of the electrode, the face insulation having one of more apertures therein which may be filled with conducting jelly for connecting the electrode to a body. NASA



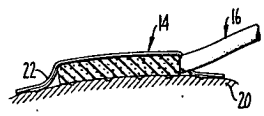
N74-11901*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

ULTRA-FLEXIBLE BIOMEDICAL ELECTRODE AND WIRES Patent Application

Salvadore A. Rositano, inventor (to NASA) Filed 13 Jul. 1973 19 p

(NASA-Case-ARC-10268-3; US-Patent-Appl-SN-379018) Avail: NTIS HC $3.00 CSCL 06B

A flexible, stretchable biomedical electrode and wire connector which is designed for use by physicians, medical technicians and researchers to connect an electric instrument to the body. The electrode and wire connector comprise a soft flexible elastomer which has been loaded with a conductive metallic powder to render it conductive. An important variation of the invention includes an insulating layer over the back of the electrode which may be continuous with an insulating layer over the back of the electrode which may be continuous with an insulating layer over the connecting wire. The invention provides a soft, flexible conductive electrode for biopotential measurements or stimulation which has a low contact potential and which has an electrical cable which will conform to the body contour during body motion. NASA



N74-12778* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

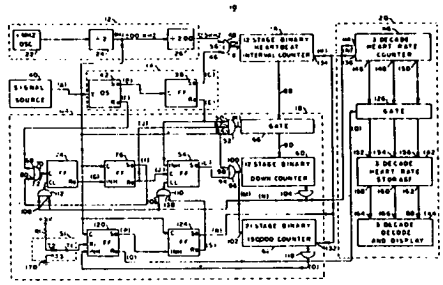
DIGITAL COMPUTING CARDIOTACHOMETER Patent

Hubert E. Smith, John R. Rasquin, and Roy A. Taylor, inventors (to NASA) Issued 20 Nov. 1973 7 p Filed 7 Apr. 1972 supersedes N72-22098 (10 - 13, p 1702)

(NASA-Case-MFS-20284-1; US-Patent-3,773,038; US-Patent-Appl-SN-242027; US-Patent-Class-128-2.06F; US-Patent-Class-128-2.05T; US-Patent-Class-324-78D; US-Patent-Class-324-186) Avail: US Patent Office CSCL 06B

A tachometer is described which instantaneously measures heart rate. During the two intervals between three succeeding heart beats, the electronic system: (1) measures the interval by counting cycles from a fixed frequency source occurring between the two beats; and (2) computes heat rate during the interval between the next two beats by counting the number of times that the interval count must be counted to zero in order to equal a total count of sixty times (to convert to beats per minute) the frequency of the fixed frequency source.

Official Gazette of the U.S. Patent Office



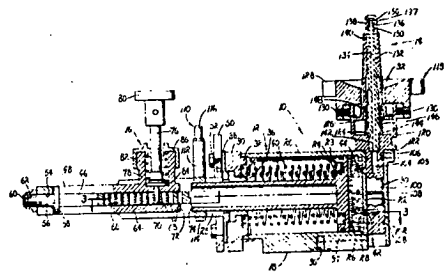
N74-12779* McDonnell-Douglas Corp., Huntington Beach, Calif.

POTABLE WATER DISPENSER Patent

Herbert R. Cunningham, inventor (to NASA) Issued 11 Dec. 1973 8 p Filed 28 Jun. 1972 Supersedes N72-28097 (10 - 19, p 2517) Sponsored by NASA

(NASA-Case-MFS-21115-1; US-Patent-3,777,942; US-Patent-Appl-SN-266930; US-Patent-Class-222-309; US-Patent-Class-222-340; US-Patent-Class-222-387; US-Patent-Class-222-514) Avail: US Patent Office CSCL 06K

A dispenser particularly suited for use in dispensing potable water into food and beverage reconstitution bags is described. The dispenser is characterized by an expansible chamber, selectively adjustable stop means for varying the maximum dimensions, a rotary valve, and a linear valve coupled in a cooperating relation for delivering potable water to and from the chamber. Official Gazette of the U.S. Patent Office



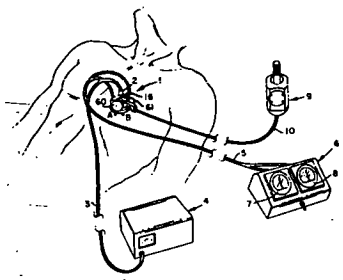
N74-13818*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

REFERENCE APPARATUS FOR MEDICAL ULTRASONIC TRANSDUCER Patent Application

Robert D. Lee, Robert J. Hudock, and Dale I. Shute, inventors (to NASA) Filed 21 Dec. 1973 18 p

(NASA-Case-ARC-10753-1; US-Patent-Appl-SN-427395) Avail: NTIS HC $3.00 CSCL 06B

A portable miniature ultrasonic transducer positioning apparatus is described having a transducer receiving sleeve coupled to a pair of orthogonally orientated, independently pivotable yokes. The yokes are pivotably mounted to a base member the under surface of which is fitted with a non-skid rubber cap. A pair of potentiometers are coupled to the axes of the yokes and to a dual meter sleeve position indicator for indicating the angular position of a probe slidably fitted in the sleeves. An oscilloscope or similar signal display device is coupled to the probe for providing signal readout from the probe for use in ultrasonic cardiology oscilloscope studies. NASA



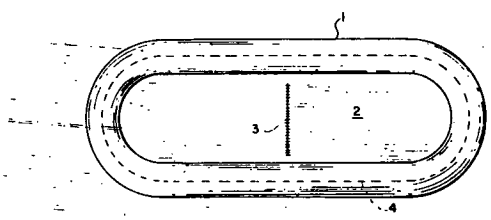
N74-14845* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

MODIFICATION OF ONE MAN LIFE RAFT Patent

Ernest J. Soter, inventor (to NASA) Issued 1 Jan. 1974 4 p Filed 29 Oct. 1971 Supersedes N72-21076 (10 - 12, p 1563) (NASA-Case-LAR-10241-1; US-Patent-3,781,933; US-Patent-Appl-SN-193672; US-Patent-Class-9-11A) Avail: US Patent Office CSCL 06K

A one man inflatable life raft is described. The raft has an inflatable tube perimetrically bounding the occupant receiving space with a flexible floor member. A zippered opening in the floor allows entry and facilitates the use of a constant diameter tube. An airtight fabric bulkhead divides the peripheral tube longitudinally into inflatable tube sections, where if either tube section were punctured, the bulkhead would move into the punctured section to substitute for the punctured wall portion and maintain the inflatable volume of the tube. The floor member is attached to the central portion of the tube wall so that either side of the raft can be the up side.

Official Gazette of the U.S. Patent Office



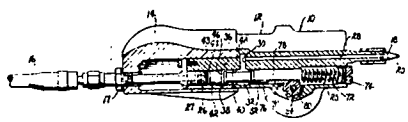
N74-17853* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

METERING GUN FOR DISPENSING PRECISELY MEASURED CHARGES OF FLUID Patent

Thomas A. Cook (McDonnell-Douglas Corp., Huntington Beach, Calif.) and Hans Scheibe, inventors (to NASA) (McDonnell-Douglas Corp., Huntington Beach, Calif.) Issued 5 Feb. 1974 8 p Filed 28 Jun. 1972 Supersedes N72-28098 (10 - 19, p 2517) Sponsored by NASA (NASA-Case-MFS-21163-1; US-Patent-3,790,037; US-Patent-Appl-SN-266925; US-Patent-Class-222-324; US-Patent-Class-224-444) Avail: US Patent Office CSCL 06I

A cyclically operable fluid dispenser for use in dispensing precisely measured charges of potable water aboard spacecraft is described. The dispenser is characterized by (1) a sealed housing adapted to be held within a crewman's palm and coupled with a pressurized source of potable water; (2) a dispensing jet projected from the housing and configured to be received within a crewman's lips; (3) an expansible measuring chamber for measuring charges of drinking water received from the source; (4) and a dispenser actuator including a lever extended from the housing to be digitated for initiating operational cycles, whereby precisely measured charges of potable water selectively are delivered for drinking purposes in a weightless environment.

Official Gazette of the U.S. Patent Office

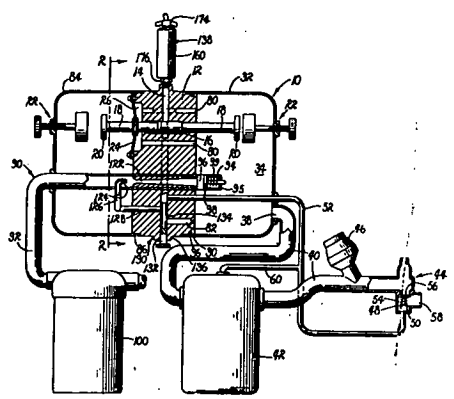


N74-17858*# National Aeronautics and Space Administration. Pasadena Office, Calif.

AN IMPROVED HEAT STERILIZABLE PATIENT VENTILATOR Patent Application

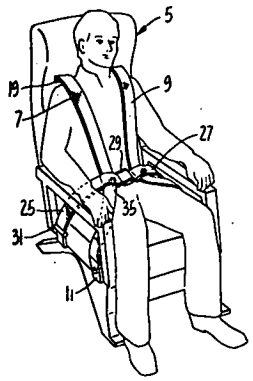
Alexander S. Irons (JPL), Paul P. Muehter (JPL), and Willie D. Kent, inventors (to NASA) (JPL) Filed 7 Mar. 1974 22 p (Contract NAS7-100) (NASA-Case-NPO-13313-1; US-Patent-Appl-SN-449153) Avail: NTIS HC $4.25 CSCL 06L

A modified heat sterilizable patient ventilator is disclosed. The ventilator is characterized by a ported center body, a shell formed of heat sterilizable material mounted on the center body and defining a hermetically sealed reservoir for confining under positive pressure a mixture of bacteria free gas, and a pneumatic circuit including an oxygen delivery jet coupled with an absolute filtration system for delivering a bacteria free mixture of gases to the reservior. NASA



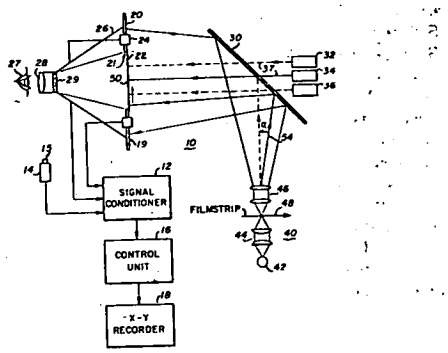
N74-18806*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
SHOULDER HARNESS AND LAP BELT RESTRAINT SYSTEM Patent Application
Albert P. Garavaglia and Dennis S. Matsuhiro, inventors (to NASA) Filed 19 Mar. 1974 9 p
(NASA-Case-ARC-10519-2; US-Patent-Appl-SN-452767) Avail: NTIS HC $4.00 CSCL 06Q

A shoulder harness and lap belt restraint system are reported wherein the lap belt is combined with the shoulder harness in such a manner that a single fastening suffices to fasten both the shoulder strap and the lap belt. NASA



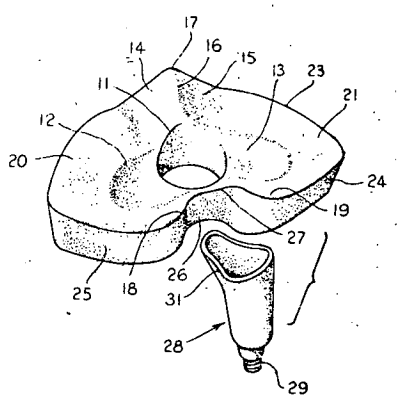
N74-19761*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
VISUAL EXAMINATION APPARATUS Patent Application
Richard F. Haines, James W. Fitzgerald, and Salvadore A. Rositano, inventors (to NASA) Filed 19 Mar. 1974 21 p
(NASA-Case-ARC-10329-2; US-Patent-Appl-SN-452768) Avail: NTIS HC $4.25 CSCL 06B

Visual examination apparatus and, more particularly, an automated visual sensitivity tester for examining the eyes of a human being to determine visual field sensitivity and blind spot size, shape, and position is described. A projection system is provided for projecting dynamic visual stimuli onto a viewing screen which is viewed by a patient through an infinity collimating lens. The projection system also includes several photocells for developing electrical signals commensurate with the projected visual stimuli. Response signals provided by a hand held switch and the electrical signals from photocells are fed into a signal conditioner and then into a control unit which drives an X-Y recorder to provide a record of both stimulus and response signals. NASA



N74-20725* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
REDUCED GRAVITY FECAL COLLECTOR SEAT AND URINAL Patent
Jeri Wexler Brown, inventor (to NASA) Issued 23 Apr. 1974 5 p Filed 15 Mar. 1973 Supersedes N73-20141 (11 - 11, p 1249)
(NASA-Case-MFS-22102-1; US-Patent-3,805,303; US-Patent-Appl-SN-341621; US-Patent-Class-4-10; US-Patent-Class-4-120) Avail: US Patent Office CSCL 06I

A waste collection system for use in a reduced gravity including a seat having an opening centrally located with a pair of opposed depressed valleys on opposite sides of said opening for accommodating the ischial tuberosities of a user. The seat has contoured surfaces for providing support of the user's body and includes a prominent ridge towards the rear, which provides forward-aft positioning cue to the user. A curved recess is provided adjacent the forward portion of the seat for accommodating a tubular urinal having an enlarged open mouth.
Official Gazette of the U.S. Patent Office

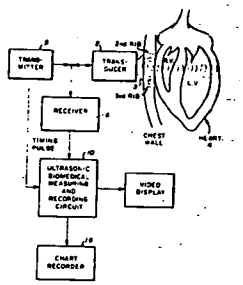


N74-20726* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
ULTRASONIC BIOMEDICAL MEASURING AND RECORDING APPARATUS Patent
Robert D. Lee, inventor (to NASA) Issued 9 Apr. 1974 9 p Filed 18 Aug. 1972 Supersedes N72-31116 (10 - 22, p 2923)

(NASA-Case-ARC-10597-1; US-Patent-3,802,253; US-Patent-Appl-SN-281876; US-Patent-Class-73-67.9; US-Patent-Class-128-2V) Avail: US Patent Office CSCL 06B

A train of ultrasonic pulses is beamed into the body of an animal. Organs intercepted by the beam reflect echo pulses following each transmitted pulse. An electronic gate with a variable width and a variable time delay relative to the transmitted pulse is utilized for selecting echoes derived from other organs or portions of organs. The integral of the echo signals received within the first half of the gate period is subtracted from a corresponding integral of the echo signal received during the second half of the gate to derive an error signal for controlling the time delay of the gate. In this manner, the selected echo signal is always maintained in the center of the gate.

Official Gazette of the U.S. Patent Office



N74-20728* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

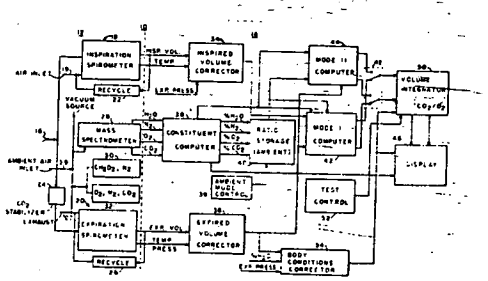
METABOLIC ANALYZER Patent

John A. Rummel and Cortes L. Perry, inventors (to NASA) Issued 26 Mar. 1974 13 p Filed 26 Dec. 1972 Supersedes N73-15156 (11 - 06, p 0635)

(NASA-Case-MFS-21415-1; US-Patent-3,799,149; US-Patent-Appl-SN-318152; US-Patent-Class-128-2.07; US-Patent-Class-73-23; US-Patent-Class-73-421.5R; US-Patent-Class-128-2.08) Avail: US Patent Office CSCL 06B

An apparatus is described for the measurement of metabolic rate and breathing dynamics in which inhaled and exhaled breath are sensed by sealed, piston-displacement type spirometers. These spirometers electrically measure the volume of inhaled and exhaled breath. A mass spectrometer analyzes simultaneously for oxygen, carbon dioxide, nitrogen and water vapor. Computation circuits are responsive to the outputs of the spirometers, mass spectrometer, temperature, pressure and timing signals and compute oxygen consumption, carbon dioxide production, minute volume and respiratory exchange ratio. A selective indicator provides for read-out of these data at predetermined cyclic intervals.

Official Gazette of the U.S. Patent Office



06 CHEMISTRY

Includes chemical analysis and identification (e.g., spectroscopy). For applications see: 17 Materials, Metallic; 18 Materials, Nonmetallic; and 27 Propellants.

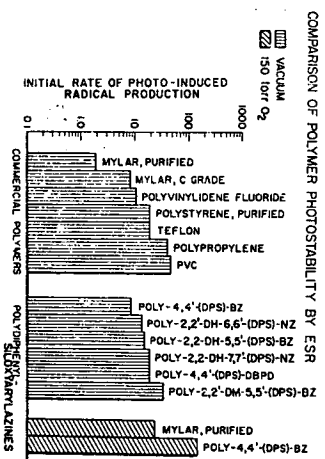
N74-11926*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

ULTRAVIOLET AND THERMALLY STABLE POLYMER COMPOSITIONS Patent Application

Ronald F. Reinisch, Hermilo R. Gloria, Ronald E. Goldsberry, and Michael J. Adamson, inventors (to NASA) Filed 8 Nov. 1973 19 p

(NASA-Case-ARC-10592-2; US-Patent-Appl-SN-414043) Avail: NTIS HC $3.00 CSCL 07D

Aromatic azines for the preparation of poly(diarylsiloxy) arylazines are reported. These polymers are made by condensing a multihydroxylated aryl azine monomer of the invention with a bis(anilino)diaryl or dialkyl silane monomer. Because of their particular chemical composition, the resulting polymers have an inherent stability with respect to ultraviolet light and high temperatures. The stabilization occurs at wavelengths including those shorter than those found on earth, both in the absence and presence of oxygen, so that the polymers are particularly useful for application in extraterrestrial space. NASA



N74-12812* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

POLYIMIDE FOAM FOR THE THERMAL INSULATION AND FIRE PROTECTION Patent

Robert W. Rosser, inventor (to NASA) Issued 13 Nov. 1973 4 p Filed 12 Nov. 1971 Supersedes N72-21102 (10 - 12, p 1566)

(NASA-Case-ARC-10464-1; US-Patent-3,772,216; US-Patent-Appl-SN-198472; US-Patent-Class-260-2.5AM) Avail: US Patent Office CSCL 07D

The preparation of chemically resistant and flame retardant foams from polyfunctional aromatic carboxylic acid derivatives and organic polyisocyanates is outlined. It was found that polyimide foams of reproducible density above 1 lb./ft. and below 6 lbs./cu ft. can be obtained by employing in the reaction of least 2% by weight of siloxane-glycol copolymer as a surfactant which acts as a specific density control agent. Polyimide foams into which reinforcing fibers such as silicon dioxide and carbon fibers may be incorporated were also produced.

Official Gazette of the U.S. Patent Office

N74-12813* General Dynamics/Convair, San Diego, Calif.

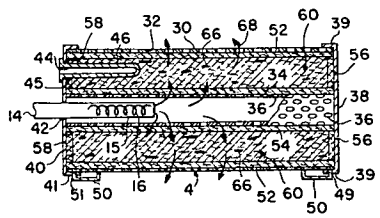
CATALYST CARTRIDGE FOR CARBON DIOXIDE REDUCTION UNIT Patent

Roy F. Holmes, inventor (to NASA) Issued 13 Nov. 1973 5 p Filed 21 Oct. 1971 Supersedes N72-21099 (10 - 12, p 1566) Sponsored by NASA

(NASA-Case-LAR-10551-1; US-Patent-3,771,959; US-Patent-Appl-SN-191301; US-Patent-Class-23-288J; US-Patent-Class-23-288F; US-Patent-Class-23-252R; US-Patent-Class-23-281; US-Patent-Class-423-231; US-Patent-Class-128-191R; US-Patent-Class-55-510; US-Patent-Class-55-518) Avail: US Patent Office CSCL 07D

A catalyst cartridge, for use in a carbon dioxide reducing apparatus in a life support system for space vehicles, is described. The catalyst cartridge includes an inner perforated metal wall, an outer perforated wall space outwardly from the inner wall, a base plate closing one end of the cartridge, and a cover plate closing the other end of the cartridge. The cover plate has a central aperture through which a supply line with a heater feeds a gaseous reaction mixture comprising hydrogen and carbon dioxide at a temperature from about 1000 to about 1400 F. The outer surfaces of the internal wall and the inner surfaces of the outer wall are lined with a ceramic fiber batting material of sufficient thickness to prevent carbon formed in the reaction from passing through it. The portion of the surfaces of the base and cover plates defined within the inner and outer walls are also lined with ceramic batting. The heated reaction mixture passes outwardly through the inner perforated wall and ceramic batting and over the catalyst. The solid carbon product formes is retained within the enclosure containing the catalyst. The solid carbon product formed is retained within the enclosure containing the catalyst. The water vapor and unreacted carbon dioxide and any intermediate products pass through the perforations of the outer wall.

Official Gazette of the U.S. Patent Office



N74-12814* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

FLEXIBLE FIRE RETARDANT POLYISOCYANATE MODIFIED NEOPRENE FOAM Patent

John A. Parker and Salvatore R. Riccitiello, inventors (to NASA) Issued 13 Nov. 1973 3 p Filed 21 Apr. 1971

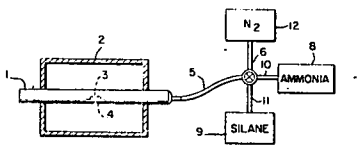
(NASA-Case-ARC-10180-1; US-Patent-3,772,220; US-Patent-Appl-SN-136253; US-Patent-Class-260-2.5L) Avail: US Patent Office CSCL 07D

Lightweight, fire resistant foams have been developed through the modification of conventional neoprene-isocyanate foams by the addition of an alkyl halide polymer. Extensive tests have shown that the modified/neoprene-isocyanate foams are much superior in heat protection properties than the foams heretofore employed both for ballistic and ablative purposes.

Official Gazette of the U.S. Patent Office

N74-19769* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
METHOD AND APPARATUS FOR STABLE SILICON DIOXIDE LAYERS ON SILICON GROWN IN SILICON NITRIDE AMBIENT Patent
Ronald A. Cohen and Roy K. Wheeler, inventors (to NASA) Issued 12 Mar. 1974 3 p Filed 9 Sep. 1969 Supersedes N70-12627 (08 - 02, p 0237)
(NASA-Case-ERC-10073-1; US-Patent-3,796,592; US-Patent-Appl-SN-856253; US-Patent-Class-117-95) Avail: US Patent Office CSCL 07D

A method and apparatus for thermally growing stable silicon dioxide layers on silicon is disclosed. A previously etched and baked silicon nitride tube placed in a furnace is used to grow the silicon dioxide. First, pure oxygen is allowed to flow through the tube to initially coat the inside surface of the tube with a thin layer of silicon dioxide. After the tube is coated with the thin layer of silicon dioxide, the silicon is oxidized thermally in a normal fashion. If the tube becomes contaminated, the silicon dioxide is etched off thereby exposing clean silicon nitride and then the inside of the tube is recoated with silicon dioxide. As is disclosed, the silicon nitride tube can also be used as the ambient for the pyrolytic decomposition of silane and ammonia to form thin layers of clean silicon nitride.
Official Gazette of the U.S. Patent Office

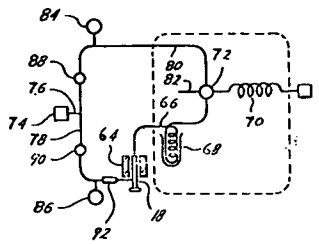


N74-19772*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
[AROMATIC POLYIMIDE PREPARATION] Patent Application
Vernon L. Bell, inventor (to NASA) Filed 5 Mar. 1974 10 p
(NASA-Case-LAR-11372-1; US-Patent-Appl-SN-448321) Avail: NTIS HC $4.00 CSCL 07C

A method of preparing aromatic polyimides having uniquely low softening temperatures is described. By using meta-substituted aromatic diamines alone in homopolyimide preparation by reacting them with aromatic dianhydrides, homopolyimides are recoverable. They also are thermoplastic at such unusually low temperatures as to make them moldable and otherwise processible under more favorable conditions. NASA

N74-19776*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
ANALYSIS OF VOLATILE ORGANIC COMPOUNDS Patent Application
Albert Zlatkis, inventor (to NASA) (Houston Univ.) Filed 12 Mar. 1974 44 p
(Contracts NAS9-8260; NAS9-12093)
(NASA-Case-MSC-14428-1; US-Patent-Appl-SN-450500) Avail: NTIS HC $5.25 CSCL 07C

An improved system is described for reproducibly analyzing, both qualitatively and quantitatively, trace amounts of a large number of organic volatiles existing in a gas sample. Applications include: (1) analyzing the headspace gas of body fluids and comparing a profile of the organic volatiles with standard profiles for the detection and monitoring of disease, (2) analyzing the headspace gas of foods and beverages and comparing a profile of the organic volatiles with standard profiles so that flavor and aroma can be monitored and controlled, and (3) similar analysis for determining the organic pollutants in samples of water and air. The system includes a means (sample trap) for capturing and enriching the organic voltatiles, an injector port for directly injecting the entrapped organic volatiles to a cryogenic precolumn to provide a sharply defined plug, and a capillary separating column. Various detectors may be utilized to identify the separated volatiles. NASA



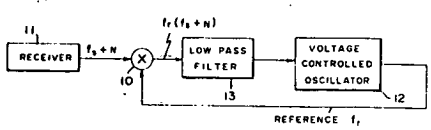
07 COMMUNICATIONS

Includes communications equipment and techniques, noise; radio and communications blackout; modulation telemetry; tracking radar and optical observation; and wave propagation. For basic research see: 23 Physics, General; and 21 Navigation.

N74-10132* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

METHOD AND APPARATUS FOR A SINGLE CHANNEL DIGITAL COMMUNICATIONS SYSTEM Patent

Lucien A. Couvillon, Jr., Christopher Carl, Richard M. Goldstein, Edward C. Posener, and Richard R. Green, inventors (to NASA) varied composition. Results showed clearly the exhaust reactivity to increase with increasing levels of polyalkylbenzenes in the fuel. For the purposes of the study, had it been possible, fuel composition should have been defined and expressed in terms of component groups such that the potential for exhaust reactivity would be the same within each group and different from group to group. Statistical analysis of the mass emissions data showed significant car and fuel effects on hydrocarbon, carbon monoxide, nitric oxide, total aldehydes, and formaldehyde emission levels and on total photochemical reactivity. Correlations were found between mass emission parameters and fuel composition. (Modified author abstract) GRA

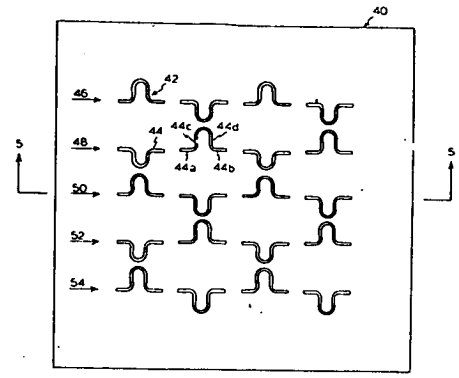


N74-11000* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

LOW LOSS DICHROIC PLATE Patent

Richard T. Woo and Arthur C. Ludwig, inventors (to NASA) Issued 30 Oct. 1973 7 p Filed 21 Sep. 1972 Supersedes N73-12150 (11 - 03, p 0266) Sponsored by NASA (NASA-Case-NPO-13171-1; US-Patent-3,769,623; US-Patent-Appl-SN-290915; US-Patent-Class-343-909; US-Patent-Class-343-781) Avail: US Patent Office CSCL 17B

A low loss dichroic plate is disclosed for passing radiation within a particular frequency band and reflecting radiation outside of that frequency band. The dichroic plate is comprised of a configuration of dipole elements defined by slots formed in a conductive plate. The slots are dimensioned so as to pass radiation of a selected frequency and are shaped so as to minimize the relationship between that frequency and the tilt angle of the plate relative to the direction of radiation. The slots are arranged so as to minimize signal power loss due to cross polarization effects. Official Gazette of the U.S. Patent Office

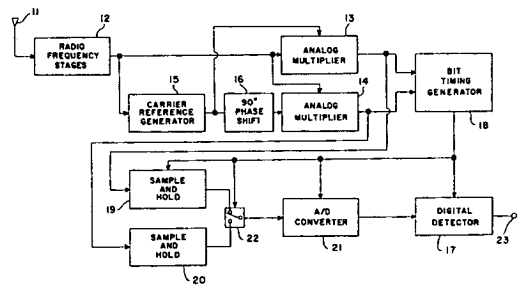


N74-11005*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

ANTI-MULTIPATH DIGITAL SIGNAL DETECTOR Patent Application

John H. Painter, inventor (to NASA) Filed 2 Nov. 1973 14 p (NASA-Case-LAR-11379-1; US-Patent-Appl-SN-412379) Avail: NTIS HC $3.00 CSCL 17B

The invention is a detector for radio signals which were transmitted through a multipath medium. The device operates in conjunction with the radio frequency portion of a receiver to detect digital signals which were transmitted in known modulation formats. The transmitted signal is constructed by assigning known and distinct modulation waveforms to a sequence of message symbols, or digits. The basic digital message, which the detector is to reconstruct consists of a sequence of digits, each lasting for a fixed time, say T seconds, and each picked from an alphabet of arbitrary, but fixed, size. For example, in a binary message, the alphabet consists of the digits 0 and 1. In a quartenary message, the alphabet consists of the digits 0, 1, 2, and 3. NASA

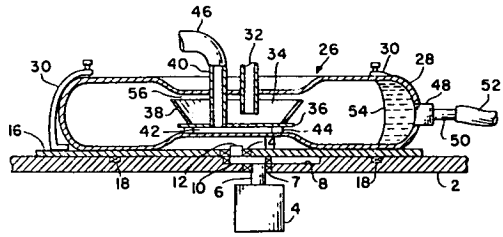


N74-12843*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

ADJUSTABLE FREQUENCY RESPONSE MICROPHONE Patent Application

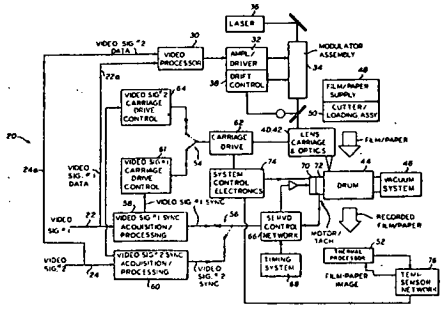
Carl V. Rumble, inventor (to NASA) Filed 21 Nov. 1973 12 p refs (NASA-Case-LAR-11170-1; US-Patent-Appl-SN-418010) Avail: NTIS HC $3.00 CSCL 17B

A frequency adjustable capacitance microphone is presented along with its design and construction costs. Operational reliability and adjustment accuracy are included. NASA



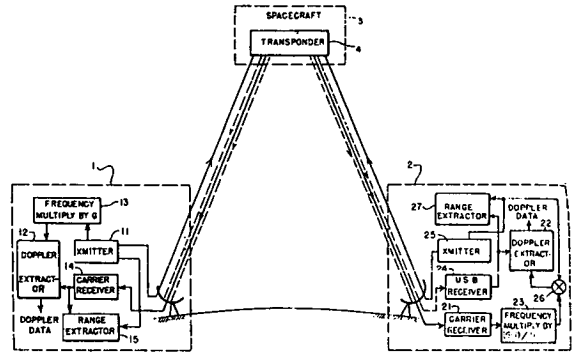
N74-15831* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
RECORDER/PROCESSOR APPARATUS Patent
Ivan H. Shim and John J. Stelben, inventors (to NASA) Issued 25 Dec. 1973 20 p Filed 7 Sep. 1971 Supersedes N73-31089 (11 - 22, p 2631) Sponsored by NASA
(NASA-Case-GSC-11553-1; US-Patent-3,781,902; US-Patent-Appl-SN-177985; US-Patent-Class-346-24; US-Patent-Class-34-162; US-Patent-Class-95-89R; US-Patent-Class-178-6.7R; US-Patent-Class-219-216; US-Patent-Class-219-388; US-Patent-Class-346-108; US-Patent-Class-346-138) Avail: US Patent Office CSCL 14C

An apparatus is described for recording a data input on, a thermally processible storage medium. A light source, whose intensity is modulated in response to the incoming data input, generates a raster in conformance with incoming timing/control signals so as to expose a latent image of the input information on the storage medium. A rotating drum in conjunction with an incrementally driven lens carriage associated with the laser optical system provides the raster generation. The drum is automatically loaded with the storage medium from a supply means and automatically unloaded to a thermal processor upon completion of recording. The latent image is processed by the controlled application of heat so as to produce an actual displayable image corresponding to the data input at the output of the apparatus.
Official Gazette of the U.S. Patent Office



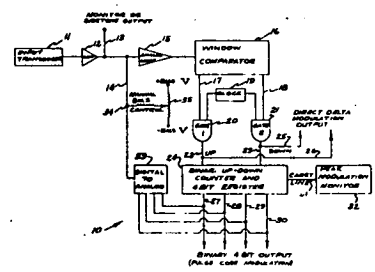
N74-15838*# National Aeronautics and Space Administration. Pasadena Office, Calif.
SIMULTANEOUS ACQUISITION OF TRACKING DATA FROM TWO STATIONS Patent Application
Gordon E. Wood, inventor (to NASA) Filed 15 Nov. 1973 24 p
(Contract NAS7-100)
(NASA-Case-NPO-13292-1; US-Patent-Appl-SN-416135) Avail: NTIS HC $3.25 CSCL 17B

A method and apparatus is disclosed for obtaining simultaneous tracking data from two ground stations relative to a spacecraft. In particular, the method is used for obtaining two-way range and doppler measurements with respect to the spacecraft using only one transponder on the spacecraft. The technique employs simultaneous transmission from two stations to produce a return signal with upper and lower sidebands resulting from the interference of the two transmissions. A transponder transmits the upper and lower sidebands centered about a carrier received by both stations. One station tracks the carrier and the other tracks a sideband aided by the carrier.
NASA



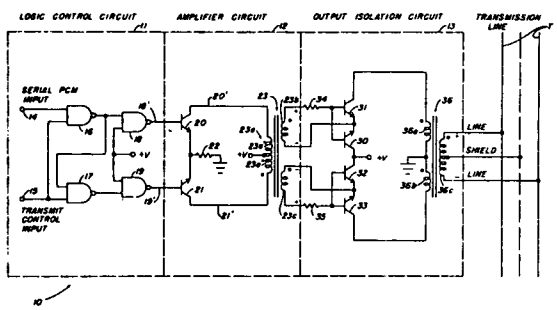
N74-17885* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
MULTIFUNCTION AUDIO DIGITIZER Patent
Leo G. Monford, Jr., inventor (to NASA) Issued 5 Mar. 1974 5 p Filed 9 Nov. 1971 Supersedes N72-20157 (10 - 11, p 1439)
(NASA-Case-MSC-13855-1; US-Patent-3,795,900; US-Patent-Appl-SN-196931; US-Patent-Class-340-347AD; US-Patent-Class-325-38B; US-Patent-Class-332-11D) Avail: US Patent Office CSCL 17B

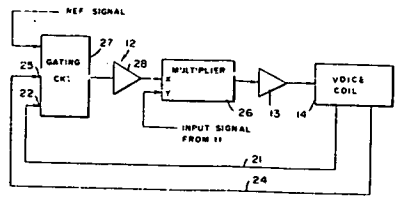
An illustrative embodiment of the invention includes apparatus which simultaneously produces both direct delta modulation and pulse code modulation. An input signal, after amplification, is supplied to a window comparator which supplies a polarity control signal to gate the output of a clock to the appropriate input of a binary up-down counter. The control signals provide direct delta modulation while the up-down counter output provides pulse code modulation.
Official Gazette of the U.S. Patent Office



N74-17888*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
DIGITAL TRANSMITTER FOR DATA BUS COMMUNICATIONS SYSTEM Patent Application
George Eugene Proch, inventor (to NASA) (Lockheed Electron. Co.) Filed 27 Dec. 1973 19 p
(Contract NAS9-12200)
(NASA-Case-MSC-14558-1; US-Patent-Appl-SN-428994) Avail: NTIS HC $4.00 CSCL 17B

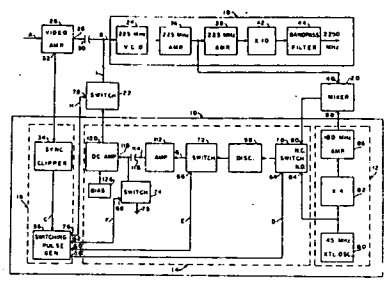
An improved digital transmitter for transmitting serial pulse code modulation (pcm) data at high bit rates over a transmission line is described. When not transmitting, the transmitter features a high output impedance which prevents the transmitter from loading the transmission line. The pcm input is supplied to a logic control circuit which produces two discrete logic level signals which are supplied to an amplifier. The amplifier, which is transformer coupled to the output isolation circuitry, converts the discrete logic level signals to two high current level, ground isolated signals in the secondary windings of the coupling transformer. The latter signals are employed as inputs to the isolation circuitry which includes two series transistor pairs operating into a hybrid transformer functioning to isolate the transmitter circuitry from the transmission line. An effective increased amplitude, balanced, differential output signal is produced by the transmitter from the serial pcm input data to provide an improved transmitted signal on the transmission line.
NASA





N74-19790* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
AUTOMATIC FREQUENCY CONTROL FOR FM TRANSMITTER Patent
Martial A. Honnell, inventor (to NASA) (Auburn Univ.) Issued 26 Mar. 1974 7 p Filed 20 Feb. 1973 Supersedes N73-18177 (11 -09, p 1002) Sponsored by NASA
(NASA-Case-MFS-21540-1; US-Patent-3,800,224;
US-Patent-Appl-SN-333912; US-Patent-Class-325-148;
US-Patent-Class-178-7.1) Avail: US Patent Office CSCL 17B

An automatic frequency control circuit for an FM television transmitter is described. The frequency of the transmitter is sampled during what is termed the back porch portion of the horizontal synchronizing pulse which occurs during the retrace interval, the frequency sample compared with the frequency of a reference oscillator, and a correction applied to the frequency of the transmitter during this portion of the retrace interval.
Official Gazette of the U.S. Patent Office

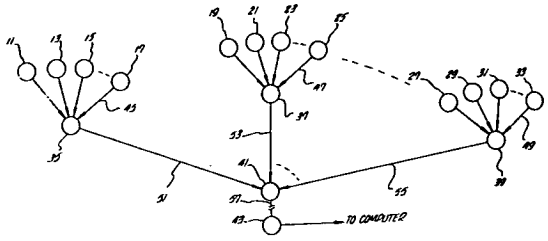


N74-19788* National Aeronautics and Space Administration. Pasadena Office, Calif.
GATED COMPRESSOR, DISTORTIONLESS SIGNAL LIMITER Patent
Raymond C. Woodbury, inventor (to NASA) (JPL) Issued 26 Mar. 1974 7 p Filed 28 Jun. 1972 Supersedes N72-28166 (10 - 19, p 2526) Sponsored by NASA
(NASA-Case-NPO-11820-1; US-Patent-3,800,237;
US-Patent-Appl-SN-266912; US-Patent-Class-328-168;
US-Patent-Class-328-160; US-Patent-Class-328-172;
US-Patent-Class-333-14; US-Patent-Class-307-237) Avail: US Patent Office CSCL 17B

A distortionless gated compressor for limiting the amplitude of a signal so as not to produce undesired signal levels responsive thereto is disclosed. The gated compressor includes a distortionless multiplier which multiplies an AC signal from a factor defined by a DC control signal. The compressor includes a plurality of channels each responsive to a signal produced in response to the multiplier's output. When the signal supplied to any channel exceeds a prescribed level, the level of the DC control signal is reduced to reduce the multiplier's output level and thereby prevent the signal applied to any channel from exceeding its prescribed level. Official Gazette of the U.S. Patent Office

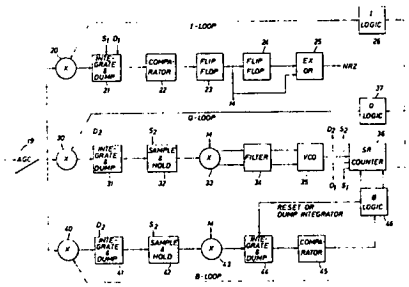
N74-19806*# National Aeronautics and Space Administration. Pasadena Office, Calif.
ASYNCHRONOUS, MULTIPLEXING, SINGLE LINE TRANSMISSION AND RECOVERY DATA SYSTEM Patent Application
Tage O. Anderson, inventor (to NASA) (JPL) Filed 27 Mar. 1974 24 p
(Contract NAS7-100)
(NASA-Case-NPO-13321-1; US-Patent-Appl-SN-455163) Avail: NTIS HC $4.25 CSCL 17B

A transmission system for asynchronously communicating binary data from a plurality of satellite sampling locations to a central location over a single channel, unidirectional communication line is presented. The novelty of the invention appears to reside in the employment of dual satellite message frames from each one of a plurality of satellite locations. The pairs of frames are asynchronously multiplexed with other frame pairs on a single, unidirectional transmission line connected to a remote location. Employment of these dual message frames in an asynchronous environment provides sufficient information at the remote location to guarantee synchronization and demultiplexing by signals derived from the received data frames. The techniques of this invention provide simplified and reliable circuitry at the plurality of satellite locations. NASA



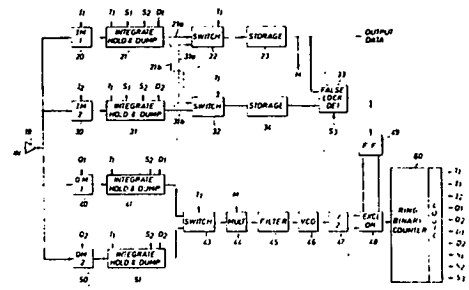
N74-20809* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
PULSE CODE MODULATED SIGNAL SYNCHRONIZER Patent
Herbert S. Kobayashi, inventor (to NASA) Issued 26 Mar. 1974 11 p Filed 24 Jul. 1972 Supersedes N72-28165 (10 - 19, p 2526)
(NASA-Case-MSC-12462-1; US-Patent-3,800,227; US-Patent-Appl-SN-274360; US-Patent-Class-325-320; US-Patent-Class-325-423; US-Patent-Class-178-88) Avail: US Patent Office CSCL 17B

A bit synchronizer for a split phase PCM transmission is reported that includes three loop circuits which receive incoming phase coded PCM signals. In the first loop, called a Q-loop, a generated, phase coded, PCM signal is multiplied with the incoming signals, and the frequency and phase of the generated signal are nulled to that of the incoming subcarrier signal. In the second loop, called a B-loop, a circuit multiplies a generated signal with incoming signals to null the phase of the generated signal in a bit phase locked relationship to the incoming signal. In a third loop, called the I-loop, a phase coded PCM signal is multiplied with the incoming signals for decoding the bit information from the PCM signal. A counter means is used for timing of the generated signals and timing of sample intervals for each bit period. Official Gazette of the U.S. Patent Office



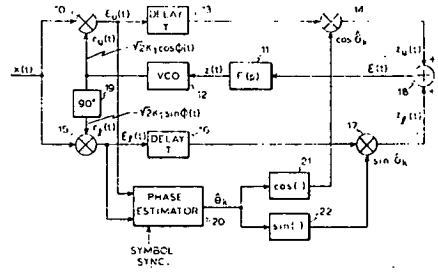
N74-20810* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
PULSE CODE MODULATED SIGNAL SYNCHRONIZER Patent
Herbert S. Kobayashi, inventor (to NASA) Issued 23 Apr. 1974 11 p Filed 8 Nov. 1972 Supersedes N73-11142 (11 - 02, p 0141)
(NASA-Case-MSC-12494-1; US-Patent-3,806,816; US-Patent-Appl-SN-304705; US-Patent-Class-325-321; US-Patent-Class-325-419) Avail: US Patent Office CSCL 09E

A bit synchronizer for a split phase PCM transmission has first and second loop systems which respectively receive incoming phase coded PCM signals. In the first loop system the incoming bit signals are simultaneously supplied to two channels which alternately receive a generated, phase coded bit signal representative of a binary digit, and the generated bit signal is multiplied with the incoming bit signals. The multiplied signals are respectively integrated and held. When the incoming signal is properly phase locked with the generated bit signal, each channel will produce an integrated value which increases (either positively or negatively) over the entire bit period of the generated bit signal. The channels are respectively sampled at the end of one bit period and at the beginning of the following bit period. The sampled signals are supplied to a bit lock detector.
Official Gazette of the U.S. Patent Office



N74-20811* National Aeronautics and Space Administration. Pasadena Office, Calif.
DECISION FEEDBACK LOOP FOR TRACKING A POLY-PHASE MODULATED CARRIER Patent
Marvin K. Simon, inventor (to NASA) (JPL) Issued 23 Apr. 1974 8 p Filed 6 Mar. 1973 Supersedes N73-20180 (11 - 11, p 1255) Sponsored by NASA
(NASA-Case-NPO-13103-1; US-Patent-3,806,815; US-Patent-Appl-SN-338484; US-Patent-Class-325-320; US-Patent-Class-329-122; US-Patent-Class-325-419) Avail: US Patent Office CSCL 17B

A multiple phase modulated carrier tracking loop for use in a frequency shift keying system is described in which carrier tracking efficiency is improved by making use of the decision signals made on the data phase transmitted in each T-second interval. The decision signal is used to produce a pair of decision-feedback quadrature signals for enhancing the loop's performance in developing a loop phase error signal.
Official Gazette of the U.S. Patent Office

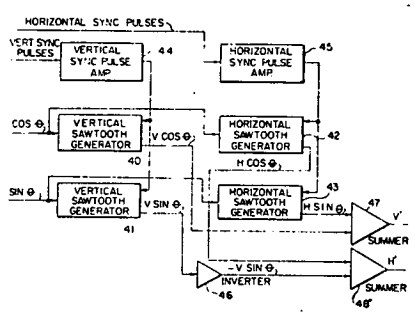


N74-20813* National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
ROTATING RASTER GENERATOR Patent
Charles A. Wagner, inventor (to NASA) Issued 9 Apr. 1974 12 p Filed 17 Nov. 1972 Supersedes N73-14171 (11 - 05, p 0513)

(NASA-Case-FRC-10071-1; US-Patent-3,803,445; US-Patent-Appl-SN-307727; US-Patent-Class-315-18; US-Patent-Class-315-22; US-Patent-Class-178-7.7) Avail: US Patent Office CSCL 17B

A rotating raster generator is provided which enables display of a television raster at any arbitrary roll angle. The generator includes four integrator circuits each of which receives a first voltage input corresponding to the sine or cosine of the desired roll angle and a second input comprising conventional horizontal or vertical sync pulses. The integrator circuits each comprise an operational amplifier and a capacitor connected for producing a ramp output having a rate of change proportional to the roll angle input, an electronic switch responsive to the sync input for resetting the integrator, and a summer that adds the ramp output of the integrator to the roll angle input so as to provide a zero-centered deflection control voltage.

Official Gazette of the U.S. Patent Office



BLOCK DIAGRAM OF ROTATING RASTER GENERATOR

08 COMPUTERS

Includes computer operation and programming; and data processing. For applications, see specific categories. For related information see also: 19 Mathematics

N74-12887* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

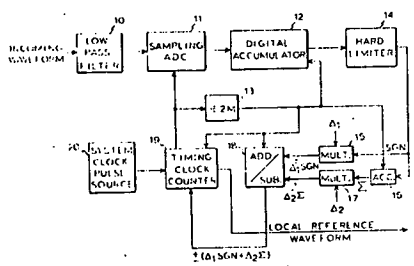
DIGITAL SECOND-ORDER PHASE-LOCKED LOOP Patent

Jack K. Holes, Christopher Carl, and Carl R. Tegnelia, inventors (to NASA) Issued 4 Dec. 1973 9 p Filed 18 Sep. 1972 Supersedes N73-12192 (11 - 03, p 0270) Sponsored by NASA

(NASA-Case-NPO-11905-1; US-Patent-3,772,272; US-Patent-Appl-SN-290030; US-Patent-Class-329-104; US-Patent-Class-178-88; US-Patent-Class-325-320; US-Patent-Class-329-122; US-Patent-Class-329-126) Avail: US Patent Office CSCL 09B

A digital second-order phase-locked loop is disclosed in which a counter driven by a stable clock pulse source is used to generate a reference waveform of the same frequency as an incoming waveform, and to sample the incoming waveform at zero-crossover points. The samples are converted to digital form and accumulated over M cycles, reversing the sign of every second sample. After every M cycles, the accumulated value of samples is hard limited to a value SGN = + or - 1 and multiplied by a value delta sub 1 equal to a number of n sub 1 of fractions of a cycle. An error signal is used to advance or retard the counter according to the sign of the sum by an amount equal to the sum.

Official Gazette of the U.S. Patent Office



N74-12888* Lockheed Electronics Co., Houston, Tex.

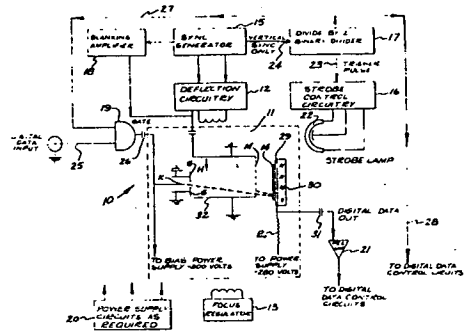
DATA STORAGE, IMAGE TUBE TYPE Patent

Phillip C. Lipoma, inventor (to NASA) Issued 11 Dec. 1973 6 p Filed 28 Jun. 1972 Supersedes N72-27215 (10 - 18, p 2399) Sponsored by NASA

(NASA-Case-MSC-14053-1; US-Patent-3,778,786; US-Patent-Appl-SN-266899; US-Patent-Class-340-173CR; US-Patent-Class-340-173LM; US-Patent-Class-328-123) Avail: US Patent Office CSCL 09B

Method and apparatus for the storage of digital or analog electrical signals are provided by a memory storage system employing a conventional vidicon tube. At the beginning of an operating cycle, the vidicon is conditioned to accept electrical data input by exposing its photosensitive target to a short, high intensity light flash. A first electron beam scan of the photosensitive surface then sets up a charge pattern on the photosensitive target. A second electron beam scan of the photosensitive surface by an unmodulated electron beam then develops an output signal across an output resistor by using capacitive currents. The conditioning and scanning steps are operated repetitively at high speed using conventional television camera scan, sync, and power supply circuitry to provide a low cost data storage system.

Official Gazette of the U.S. Patent Office



N74-14920* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.

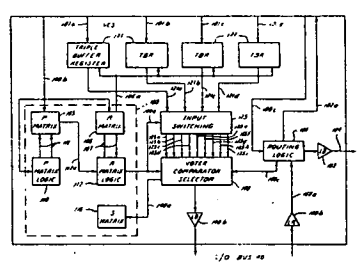
ADAPTIVE VOTING COMPUTER SYSTEM Patent

Louis J. Koczela (Autonetics, Anaheim, Calif.) and Donald S. Wilgus, inventors (to NASA) (Autonetics, Anaheim, Calif.) Issued 1 Jan. 1974 34 p Filed 25 Feb. 1972 Supersedes N72-21206 (10 - 12 p 1581) Sponsored by NASA

(NASA-Case-MSC-13932-1; US-Patent-3,783,250; US-Patent-Appl-SN-229354; US-Patent-Class-235-153AK) Avail: US Patent Office CSCL 09B

A computer system is reported that uses adaptive voting to tolerate failures and operates in a fail-operational, fail-safe manner. Each of four computers is individually connected to one of four external input/output (I/O) busses which interface with external subsystems. Each computer is connected to receive input data and commands from the other three computers and to furnish output data commands to the other three computers. An adaptive control apparatus including a voter-comparator-switch (VCS) is provided for each computer to receive signals from each of the computers and permits adaptive voting among the computers to permit the fail-operational, fail-safe operation.

Official Gazette of the U.S. Patent Office



N74-17911*# National Aeronautics and Space Administration. Pasadena Office, Calif.

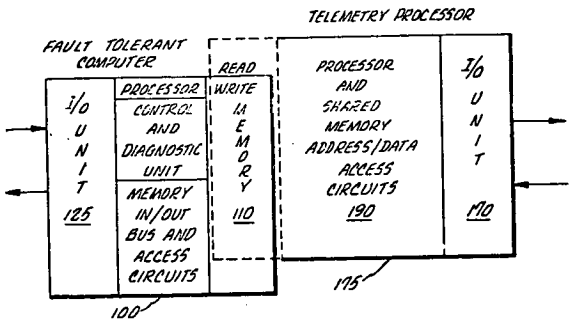
SHARED MEMORY FOR A FAULT-TOLERANT COMPUTER Patent Application

George C. Gilley, inventor (to NASA) (JPL) Filed 31 Aug. 1973 22 p

(Contract NAS7-100)

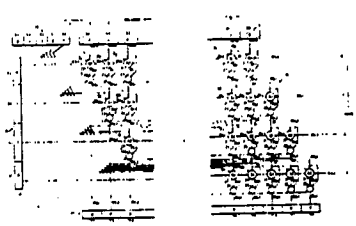
(NASA-Case-NPO-13139-1; US-Patent-Appl-SN-393524) Avail: NTIS HC $4.25 CSCL 09B

A system for sharing a memory in a fault-tolerant computer is described. The memory is under the direct control and monitoring of error detecting and error diagnostic units in the fault-tolerant computer. This computer, for example, verifies that data to and from the memory is legally encoded and verifies that words read from the memory at a desired address are, in fact, actually delivered from that desired address. The invention provides the means for a second processor, which is independent of the direct control and monitoring of the error checking and diagnostic units of the fault-tolerant computer, to share the memory of the fault-tolerant computer and includes circuitry to verify that: (1) The processor has properly accessed a desired memory location in the memory. (2) A data word read out from the memory is properly coded. (3) No inactive memory was erroneously outputting data onto the shared memory bus. NASA



N74-20836* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
A SYNCHRONOUS BINARY ARRAY DIVIDER Patent
Gary Y. Wang, inventor (to NASA) Issued 3 May 1974 8 p Filed 1 Jul. 1969 Supersedes N70-11132 (08 - 01, p 0063) (NASA-Case-ERC-10180-1; US-Patent-3,803,393; US-Patent-Appl-SN-838278; US-Patent-Class-235-164) Avail: US Patent Office CSCL 09B

An asynchronous binary divider formed of an array of identical logic cells is described. Each cell includes a single bit binary subtractor and a selection gate. The array is connected to divisor, dividend, quotient and remainder registers. Divisor and dividend numbers are read into the divisor and dividend registers, respectively. The array of identical logic cells performs the division in parallel asynchronously and places the results of the division in the quotient and remainder registers for subsequent readout.
Official Gazette of the U.S. Patent Office

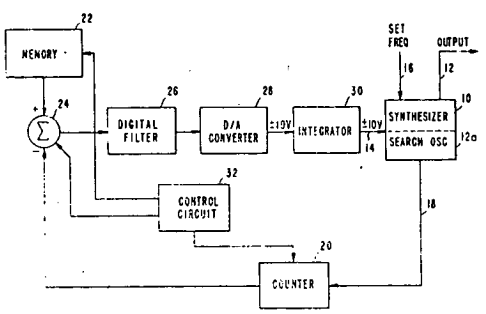


09 ELECTRONIC EQUIPMENT

Includes electronic test equipment and maintainability; component parts, e.g., electron tubes, tunnel diodes, transistors; integrated circuitry; microminiaturization. For basic research see: 10 Electronics. For related information see also: 07 Communications and 21 Navigation.

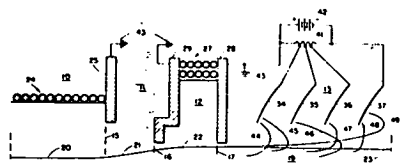
N74-10194* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
CONTROLLED OSCILLATOR SYSTEM WITH A TIME DEPENDENT OUTPUT FREQUENCY Patent
Robin A. Winkelstein, inventor (to NASA) Issued 9 Oct. 1973 8 p Filed 27 Sep. 1972 Supersedes N73-12215 (11 - 03, p 0273) Sponsored by NASA
(NASA-Case-NPO-11962-1; US-Patent-3,764,933; US-Patent-Appl-SN-292681; US-Patent-Class-331-1A; US-Patent-Class-331-4; US-Patent-Class-331-14; US-Patent-Class-331-17; US-Patent-Class-331-18; US-Patent-Class-331-178) Avail: US Patent Office CSCL 09E

A controlled oscillator system is presented for providing an output with a frequency which changes with respect to time and with a phase which is within established phase error limits. The system includes a frequency synthesizer with a symmetrical search oscillator, capable of tuning the output with a range of + or - 100 Hz about any fixed frequency to which the synthesizer is set. For a tuning range of 200 Hz (+ or - 100 Hz) an expanded search oscillator output of a frequency range of 4 MHz (from 1 MHz to 5 MHz) is provided. A counter counts continuously the expanded output cycles and at each of fixed sampling intervals, for every 0.1 second, the count or number accumulated in the counter is read out. The sample number is compared with a theoretical number which should be present in the counter at the particular sampling instant for proper synthesizer's output frequency and phase.
Official Gazette of the U.S. Patent Office



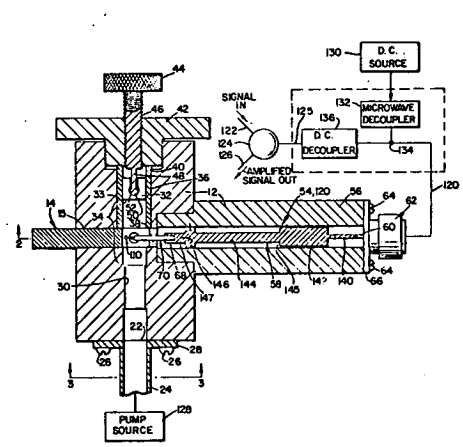
N74-10195* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
ELECTRON BEAM CONTROLLER Patent
Henry G. Kosmahl, inventor (to NASA) Issued 9 Oct. 1973 5 p Filed 27 Jun. 1972 Supersedes N72-28227 (10 - 19, p 2535)
(NASA-Case-LEW-11617-1; US-Patent-3,764,850; US-Patent-Appl-SN-266832; US-Patent-Class-315-5.38; US-Patent-Class-315-5.35) Avail: US Patent Office CSCL 09C

An electron beam device which extracts energy from an electron beam before the electrons of the beam are captured by a collector apparatus is described. The device produces refocusing of a spent electron beam by minimizing tranverse electron velocities in the beam where the electrons, having a multiplicity of axial velocities, are sorted at high efficiency by collector electrodes. Official Gazette of the U.S. Patent Office



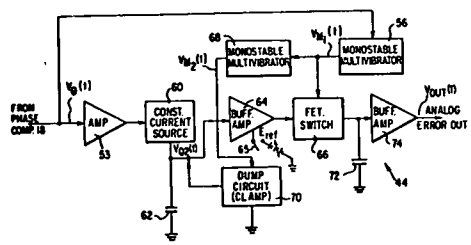
N74-10200*# Westinghouse Research Labs., Pittsburgh, Pa.
MILLIMETER WAVE PUMPED PARAMETRIC AMPLIFIER Patent Application
Lawrence E. Dickens, inventor (to NASA) Filed 2 Oct. 1973 18 p
(Contract NAS5-20149)
(NASA-Case-GSC-11617-1; US-Patent-Appl-SN-402865) Avail: NTIS HC $3.00 CSCL 09A

A millimeter wave parametric amplifier structure and a varactor diode mounting structure are presented including a housing with a pump frequency waveguiding channel and an intersecting signal frequency transmission line. The transmission line has a center conductor portion which protrudes into the pump channel. A portion of the housing forms the outer conductor of the transmission line. A pair of uncased varactor diode chips within the channel are stacked and connected in series across the waveguiding channel and are connected in parallel with respect to the inner and outer conductors of the signal transmission line. An adjustable stub means protrudes into the waveguiding channel adjacent to the stacked varactor diode chips and defines a capacitive gap across the channel for series resonating the diode chips at an idler frequency. The stub means is located close to the stacked diode chips to provide a short return path for idler current generated by the diodes. NASA



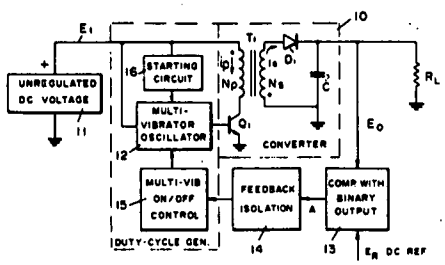
N74-10202*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
LOW SPEED PHASELOCK SPEED CONTROL SYSTEM Patent Application
Robert W. Fulcher and John Sudex, inventors (to NASA) Filed 27 Sep. 1973 29 p
(NASA-Case-GSC-11127-1; US-Patent-Appl-SN-401466) Avail: NTIS HC $3.50 CSCL 09A

A phaselock speed control system is reported that provides extremely accurate speed control, particularly at low speeds, of a brushless dc motor. The overall speed control system includes a phase comparator which compares a reference frequency signal with an encoder frequency signal. An integrator/converter unit converts the output of the phase comparator into an analog error voltage which is compensated and biased to derive a bi-directional error signal for further combination with the output from an overspeed control circuit in an operational amplifier to develop the torque polarity and control signal. NASA



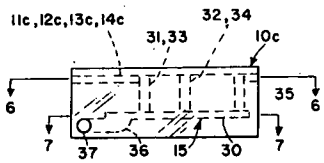
N74-11049* Duke Univ., Durham, N.C.
REGULATED dc-TO-dc CONVERTER FOR VOLTAGE STEP-UP OR STEP-DOWN WITH INPUT-OUTPUT ISOLATION Patent
Sam Yun-Ming Feng and Thomas G. Wilson, inventors (to NASA) Issued 6 Nov. 1973 9 p Filed 18 Apr. 1972 Supersedes N72-27230 (10 - 18, p 2401) Sponsored by NASA
(NASA-Case-HQN-10792-1; US-Patent-3,771,040; US-Patent-Appl-SN-245063; US-Patent-Class-321-2; US-Patent-Class-321-18; US-Patent-Class-321-45S; US-Patent-Class-323-DIG.1; US-Patent-Class-331-62; US-Patent-Class-331-113A) Avail: US Patent Office CSCL 09E

A closed loop regulated dc-to-dc converter employing an unregulated two winding inductive energy storage converter is provided by using a magnetically coupled multivibrator acting as duty cycle generator to drive the converter. The multivibrator is comprised of two transistor switches and a saturable transformer. The output of the converter is compared with a reference in a comparator which transmits a binary zero until the output exceeds the reference. When the output exceeds the reference, the binary output of the comparator drives transistor switches to turn the multivibrator off. The multivibrator is unbalanced so that a predetermined transistor will always turn on first when the binary feedback signal becomes zero.
Official Gazette of the U.S. Patent Office



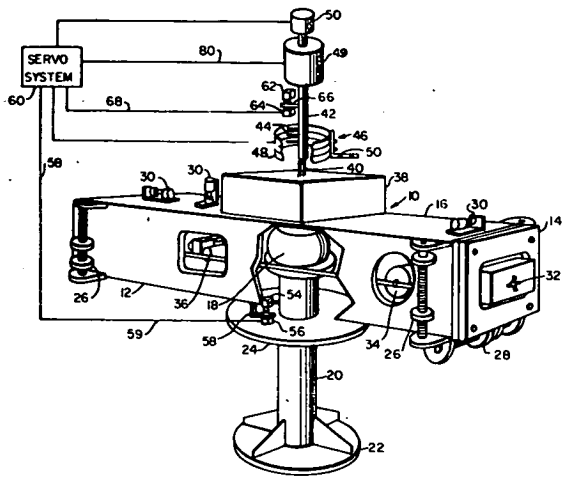
N74-11050* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
FLUID PRESSURE AMPLIFIER AND SYSTEM Patent
Howell D. Garner and Richard F. Hellbaum, inventors (to NASA) Issued 6 Nov. 1973 9 p Filed 15 May 1972 Supersedes N72-27232 (10 - 18, p 2402)
(NASA-Case-LAR-10868-1; US-Patent-3,770,021; US-Patent-Appl-SN-253249; US-Patent-Class-137-819; US-Patent-Class-137-833; US-Patent-Class-137-840) Avail: US Patent Office CSCL 09E

A flueric beam-deflection amplifier and a method of controlling the same are described. Either a single or a series of cascaded fluid amplifier units are provided and each one of which may include the usual power nozzle, control nozzles, outlet passages and vent passages. All vent passages of each fluid amplifier unit lead to an enclosed vent outlet chamber which is connected to the ambient environment or to a return manifold through a variably restricted passage. To control the fluid amplifier unit, power and control stream pressures are first established, after which the restricted passage is reduced to regulate the input bias, the gain and the input impedance of the fluid amplifier unit. Official Gazette of the U.S. Patent Office



N74-11058*# McDonnell-Douglas Corp., St. Louis, Mo.
PHASE-LOCKED SERVO SYSTEM Patent Application
Clifford Burdin, inventor (to NASA) Filed 26 Oct. 1973 19 p Sponsored by NASA
(NASA-Case-MFS-22073-1; US-Patent-Appl-SN-409991) Avail: NTIS HC $3.00 CSCL 09A

A phase-locked servo system is described for use in rotating a slip ring assembly at the exact velocity as one axis of a three-axis air bearing table. The system includes two servo loops. The first servo loop includes a rate gyroscope carried on an air bearing table which generates a signal through a summing junction circuit to be compared with a signal coming from a tachometer coupled to slip ring assembly. The corrective signal is applied to a torque motor for rotating the slip ring assembly. The second servo loop includes a pair of photo detector cells which generate pulses responsive to the rotation of the air bearing table and the slip ring assembly. These pulses are fed through a phase detector and a variable gain amplifier to a summing junction circuit for providing a fine adjustment signal to the torque motor for rotating the slip ring assembly. NASA



N74-12912* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

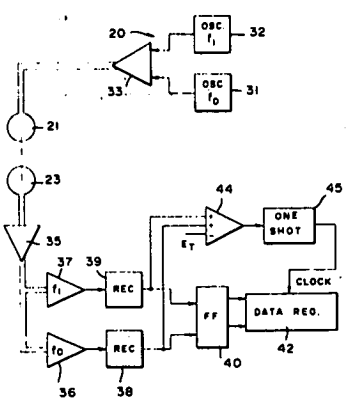
AUTOMATIC VEHICLE LOCATION SYSTEM Patent

George R. Hansen, inventor (to NASA) Issued 13 Nov. 1973 10 p Filed 5 Oct. 1971 Supersedes N73-10248 (11 - 01, p 0032) Sponsored by NASA

(NASA-Case-NPO-11850-1; US-Patent-3,772,691; US-Patent-Appl-SN-186700; US-Patent-Class-343-6.5SS; US-Patent-Class-343-6.5R; US-Patent-Class-343-18B) Avail: US Patent Office CSCL 09E

An automatic vehicle detection system is disclosed, in which each vehicle whose location is to be detected carries active means which interact with passive elements at each location to be identified. The passive elements comprise a plurality of passive loops arranged in a sequence along the travel direction. Each of the loops is tuned to a chosen frequency so that the sequence of the frequencies defines the location code. As the vehicle traverses the sequence of the loops as it passes over each loop, signals only at the frequency of the loop being passed over are coupled from a vehicle transmitter to a vehicle receiver. The frequencies of the received signals in the receiver produce outputs which together represent a code of the traversed location. The code location is defined by a painted pattern which reflects light to a vehicle carried detector whose output is used to derive the code defined by the pattern.

Official Gazette of the U.S. Patent Office



N74-12913* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

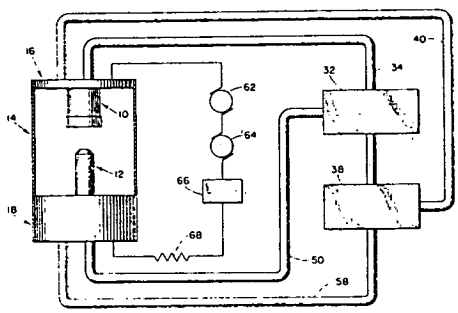
HIGH POWERED ARC ELECTRODES Patent

Jesse H. Hall, Clarence C. Gettelman, John L. Pollack, Gary C. Goldman, and Arthur J. Decker, inventors (to NASA) Issued 4 Dec. 1973 8 p Filed 14 May 1971 Supersedes N71-34210 (09 - 21, p 3402)

(NASA-Case-LEW-11162-1; US-Patent-3,777,200; US-Patent-Appl-SN-143508; US-Patent-Class-313-32; US-Patent-Class-313-153; US-Patent-Class-313-209; US-Patent-Class-313-217; US-Patent-Class-313-224) Avail: US Patent Office CSCL 09E

Nonconsumable metal electric arc electrodes are described capable of being operated in a variety of gases at various pressures, current, and powers. The cathode has a circular annulus tip to spread the emission area for improved cooling.

Official Gazette of the U.S. Patent Office

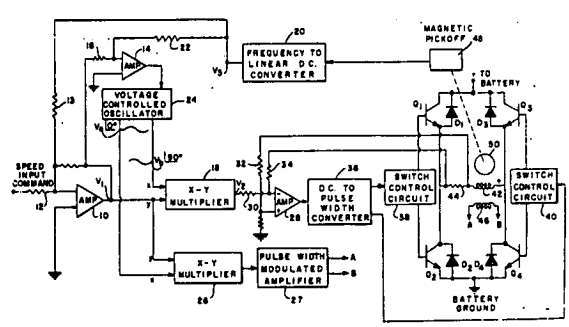


N74-13894*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

A VARIABLE FREQUENCY INVERTER FOR ac INDUCTION MOTORS WITH TORQUE, SPEED AND BRAKING CONTROL Patent Application

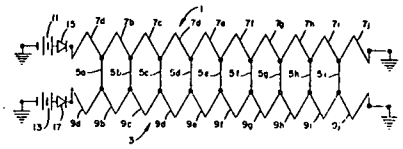
Frank J. Nola, inventor (to NASA) Filed 19 Dec. 1973 17 p (NASA-Case-MFS-22088-1; US-Patent-Appl-SN-426155) Avail: NTIS HC $3.00 CSCL 09E

A variable frequency inverter is described for driving an ac induction motor which varies the frequency and voltage to the motor windings in response to varying torque requirements for the motor so that the applied voltage amplitude and frequency are of optimal value for any motor load and speed requirement. The slip frequency of the motor is caused to vary proportionally to the torque and feedback is provided so that the most efficient operating voltage is applied to the motor. Winding current surge is limited and a controlled negative slip causes motor braking and return of load energy to a dc power source. NASA



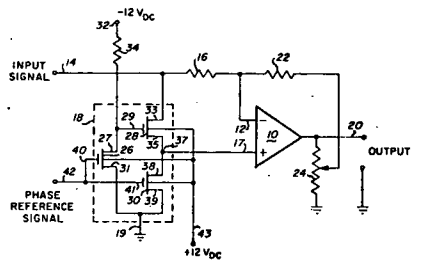
N74-14935* United Aircraft Corp., West Palm Beach, Fla.
INHERENT REDUNDACY ELECTRIC HEATER Patent
Bruce H. Kernodle, inventor (to NASA) Issued 8 May 1973 4 p Filed 30 Mar. 1972 Supersedes N72-22221 (10 - 13, p 1719) Sponsored by NASA
(NASA-Case-MFS-21462-1; US-Patent-3,732,397; US-Patent-Appl-SN-239576; US-Patent-Class-219-477; US-Patent-Class-219-539; US-Patent-Class-338-320) Avail: US Patent Office CSCL 09E

A cross-wound electrical heater comprising two resistance coils wound together with opposite pitches electrically connected at their crossing points, is reported. Each element is supplied by a separate power supply of the same magnitude, and each power supply is isolated from reverse currents by a diode. Failure of one of the windings results in only a moderate change in output power. Official Gazette of the U.S. Patent Office



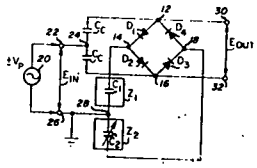
N74-14939* National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
FULL WAVE MODULATOR-DEMODULATOR AMPLIFIER APPARATUS Patent
James M. Black, inventor (to NASA) Issued 1 Jan. 1974 4 p Filed 13 Jul. 1971 Supersedes N72-15206 (10 - 06, p 0742)
(NASA-Case-FRC-10072-1; US-Patent-3,783,399; US-Patent-Appl-SN-162100; US-Patent-Class-330-9; US-Patent-Class-330-10; US-Patent-Class-330-35) Avail: US Patent Office CSCL 09E

A full-wave modulator-demodulator apparatus is described including an operational amplifier having a first input terminal coupled to a circuit input terminal, and a second input terminal alternately coupled to the circuit input terminal. A circuit is ground by a switching circuit responsive to a phase reference signal and the operational amplifier is alternately switched between a non-inverting mode and an inverting mode. The switching circuit includes three field-effect transistors operatively associated to provide the desired switching function in response to an alternating reference signal of the same frequency as an AC input signal applied to the circuit input terminal.
Official Gazette of the U.S. Patent Office



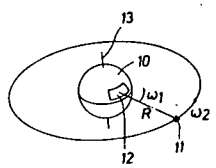
N74-14941*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
DIODE-QUAD BRIDGE CIRCUIT MEANS Patent Application
Dean R. Harrison and John Dimeff, inventors (to NASA) Filed 16 Jan. 1974 20 p
(NASA-Case-ARC-10364-2(B); US-Patent-Appl-SN-433968) Avail: NTIS HC $3.00 CSCL 09E

A diode-quad bridge transducer circuit is reported that produces an output signal which is proportional to a relationship between at least two of the impedance elements. As a discriminator circuit it provides an output signal that is proportional to the input signal frequency. NASA



N74-14942*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
POSITION DETERMINATION SYSTEMS Patent Application
Paul W. Shores, inventor (to NASA) Filed 28 Nov. 1973 17 p
(NASA-Case-MSC-12593-1; US-Patent-Appl-SN-419747) Avail: NTIS HC $3.00 CSCL 09A

Disclosed is a system for an orbital antenna which is operated at a synchronous altitude to scan an area of a celestial body. The orbiting antenna has scanning capabilities to determine the location of a ground based beacon or transmitter relative to a central surface location at a short time after activation of the beacon. The purpose of this system is to provide a means of determining the position of ground based beacons relative to a central location within seconds after activation of the beacon. Thus, rapid location of vehicles in distress such as ships at sea, auto wrecks, airplane crashes, or any other basic alarm function can be quickly located. NASA

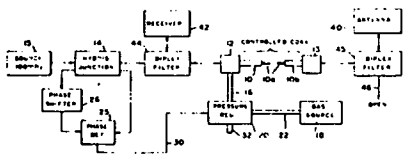


N74-17927* National Aeronautics and Space Administration. Pasadena Office, Calif.
SYSTEM FOR STABILIZING CABLE PHASE DELAY UTILIZING A COAXIAL CABLE UNDER PRESSURE Patent
Philip A. Clements, inventor (to NASA) (JPL) Issued 5 Feb. 1974 7 p Filed 23 Feb. 1973 Supersedes N73-20238 (11 - 11, p 1262) Sponsored by NASA
(NASA-Case-NPO-13138-1; US-Patent-3,790,906; US-Patent-Appl-SN-335201; US-Patent-Class-333-16; US-Patent-Class-328-155; US-Patent-Class-333-18) Avail: US Patent Office CSCL 09A

Stabilizing the phase delay of signals passing through a pressurizable coaxial cable is disclosed. Signals from an appropriate source at a selected frequency, e.g., 100 MHz, are sent through the controlled cable from a first cable end to a second cable end which, electrically, is open or heavily mismatched at 100 MHz, thereby reflecting 100 MHz signals back to the first cable end. Thereat, the phase difference between the reflected-back signals

and the signals from the source is detected by a phase detector. The output of the latter is used to control the flow of gas to or from the cable, thereby controlling the cable pressure, which in turn affects the cable phase delay.

Official Gazette of the U.S. Patent Office



N74-17928* National Aeronautics and Space Administration. Pasadena Office, Calif.

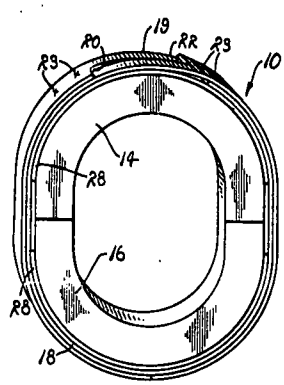
BANDED TRANSFORMER CORES Patent

William T. McLyman, inventor (to NASA) Issued 12 Feb. 1974 8 p Filed 28 Aug. 1972 Supersedes N73-22150 (11 - 13, p 1499)

(NASA-Case-NPO-11966-1; NASA-Case-NPO-13159-1; US-Patent-3,792,399; US-Patent-Appl-SN-284245; US-Patent-Class-336-210; US-Patent-Class-100-8) Avail: US Patent Office CSCL 09E

A banded transformer core formed by positioning a pair of mated, similar core halves on a supporting pedestal. The core halves are encircled with a strap, selectively applying tension whereby a compressive force is applied to the core edge for reducing the innate air gap. A dc magnetic field is employed in supporting the core halves during initial phases of the banding operation, while an ac magnetic field subsequently is employed for detecting dimension changes occurring in the air gaps as tension is applied to the strap.

Official Gazette of the U.S. Patent Office



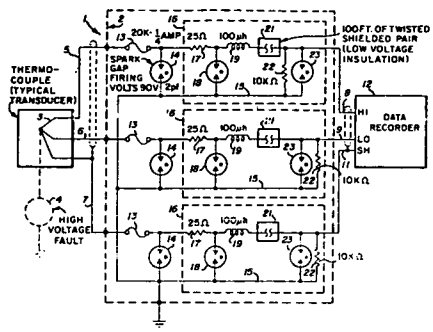
N74-17929* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

OVERVOLTAGE PROTECTION NETWORK Patent

Joseph M. Cambra, inventor (to NASA) Issued 5 Mar. 1974 5 p Filed 29 Nov. 1972 Supersedes N73-29124 (11 - 20, p 2380)

(NASA-Case-ARC-10197-1; US-Patent-3,795,840; US-Patent-Appl-SN-310624; US-Patent-Class-317-16; US-Patent-Class-317-31) Avail: US Patent Office CSCL 09A

Electrical equipment to be protected from overvoltage is connected with a possible source of overvoltage via an input conductor. A fuse is connected in series with the input conductor. A spark gap is connected between the input conductor and ground for conducting the overvoltage current to ground and for blowing the fuse to open the circuit to the electrical equipment. A pulse attenuator network is provided between the spark gap and the electrical equipment to be protected for attenuating the pulse of energy passing through the fuse and spark gap prior to blowing of the fuse. The pulse attenuator network includes additional shunt spark gaps, series inductance, and a series connection of a twisted shielded pair of conductors having low-voltage insulation. Official Gazette of the U.S. Patent Office



N74-17930* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

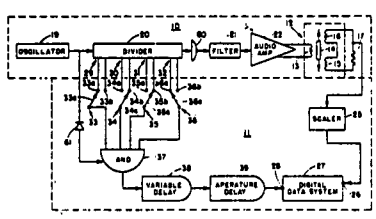
DEMODULATOR FOR CARRIER TRANSDUCERS Patent

Robert F. Roller, inventor (to NASA) (Westinghouse Elec. Corp., Pittsburgh) Issued 5 Mar. 1974 7 p Filed 24 Nov. 1971 Supersedes N72-21254 (10 - 12, p 1587) Sponsored by NASA

(NASA-Case-NUC-10107-1; US-Patent-3,795,862; US-Patent-Appl-SN-201700; US-Patent-Class-324-118; US-Patent-Class-324-102; US-Patent-Class-329-50) Avail: US Patent Office CSCL 09E

A carrier type transducer is supplied with a carrier wave via an audio amplifier, a filter, a frequency divider, and an oscillator. The carrier is modulated in accordance with the parameter being measured by the transducer and is fed to the input of a digital data system which may include a voltmeter. The output of the oscillator and the output of each stage of the divider are fed to an AND or a NAND gate and suitable variable and fixed delay circuits to the command input of the digital data system. With this arrangement, the digital data system is commanded to sample at the proper time so that the average voltage of the modulated carrier is measured. It may be utilized with ancillary circuitry for control of the parameter

Official Gazette of the U.S. Patent Office



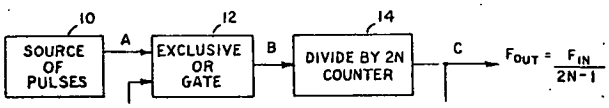
N74-18869*# National Aeronautics and Space Administration. Pasadena Office, Calif.

SYMMETRICAL ODD-MODULUS FREQUENCY DIVIDER Patent Application

Alexander Engel, inventor (to NASA) (JPL) Filed 12 Mar. 1974 9 p

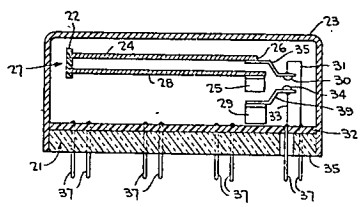
(Contract NAS7-100)
(NASA-Case-NPO-13426-1; US-Patent-Appl-SN-450503) Avail: NTIS HC $4.00 CSCL 09A

A frequency divider arrangement is reported that can be used for division by an odd number and which provides a symmetrical waveform output. The value of N is determined for any odd modulus by which it is desired to divide a frequency, and the divide by 2N counter is then obtained as well as an exclusive OR gate to receive one input signal from the source.
NASA



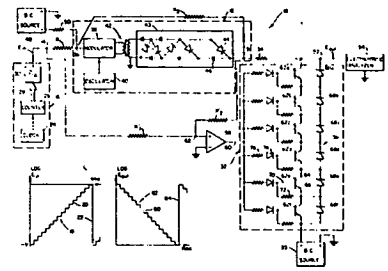
N74-19852*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
PIEZOELECTRIC RELAY Patent Application
Donald H. Fryklund, inventor (to NASA) (Accumetrics Corp.) Filed 12 Mar. 1974 22 p Sponsored by NASA
(NASA-Case-GSC-11627-1; US-Patent-Appl-SN-450501) Avail: NTIS HC $4.25 CSCL 09A

A piezoelectric device, particularly adapted for use as an electrostatic relay, is described. Each bimorph includes a stacked arrangement of piezoelectric plates and electrodes. First ends of the bimorphs of each bimorph pair are rigidily connected. The pairs of bimorphs are mounted so that all of them lie in parallel planes and have aligned longitudinal axes. The bimorph pairs are electrically connected so that the bimorphs of the two pairs are oppositely polarized and deflect in opposite direction relative to the fixed support.
NASA



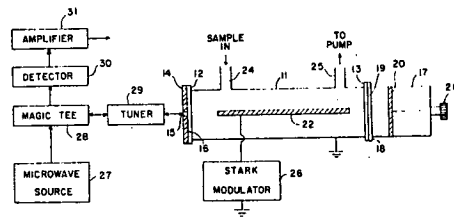
N74-19853*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
CONTROLLABLE HIGH VOLTAGE SOURCE HAVING FAST SETTLING TIME Patent Application
Henry Doong and Mario H. Acuna, inventors (to NASA) Filed 19 Mar. 1974 15 p
(NASA-Case-GSC-11844-1; US-Patent-Appl-SN-452761) Avail: NTIS HC $4.00 CSCL 09E

A high voltage dc stepping power supply for sampling a utilization device such as an electrostatic analyzer has a relatively fast settling time. The supply includes a waveform generator for deriving a low voltage staircase waveform that feeds a relatively long response time power supply. In the power supply, an ac voltage modulated by the staircase waveform is applied to a step-up transformer and thence to a voltage multiplier stack to form a high voltage. A constant dc source, applied to the input of the power supply, biases the voltage at the intermediate output terminal to be in excess of the predetermined multiple of the input voltage. A fast shunt regulator responsive to the input signal provides an output.
NASA



N74-19854*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
RESONANT WAVEGUIDE STARK CELL Patent Application
Wesley C. Easley, William F. White, and George A. Wingfield, inventors (to NASA) Filed 10 Apr. 1974 10 p
(NASA-Case-LAR-11352-1; US-Patent-Appl-SN-459736) Avail: NTIS HC $4.00 CSCL 09E

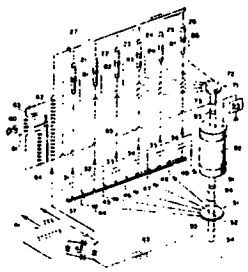
A resonant waveguide Stark cell is described suitable for use in a Stark-modulated microwave spectrometer. The cell is constructed from a short length of waveguide. A Stark electrode is located inside the waveguide parallel to the broad face of the guide and insulated with narrow teflon strips. A reflector with a small coupling iris at its center is located at one end of the cell. This small coupling iris is for passing microwave energy into and out of the cell. At the other end of the cell there is an adjustable waveguide short making the small Stark cell into a tunable cavity. Means are provided for maintaining a gas-tight compartment within the cell, and ports are provided for the introduction of the gas.
NASA



N74-20859* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
RAPIDLY PULSED, HIGH INTENSITY, INCOHERENT LIGHT SOURCE Patent
John C. Evans, Jr. and Henry W. Brandhorst, Jr., inventors (to NASA) Issued 23 Apr. 1974 6 p Filed 13 Sep. 1972 Supersedes N72-32229 (10 - 23, p 3066) Continuation-in-part of US Patent Appl. SN-848403, filed 29 Jul. 1968, which is a division of abandoned US Patent Appl. SN-487929, filed 16 Aug. 1965
(NASA-Case-XLE-2529-3; US-Patent-3,806,835; US-Patent-Appl-SN-288856; US-Patent-Class-332-7.51; US-Patent-Class-331-94.5D; US-Patent-Class-315-211; US-Patent-Class-315-228; US-Patent-Appl-SN-848403; US-Patent-Appl-SN-487929) Avail: US Patent Office CSCL 09E

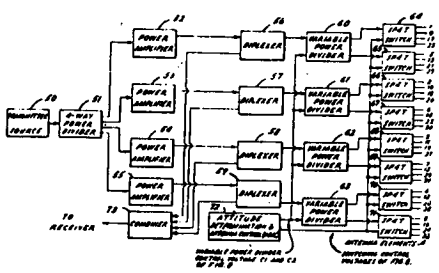
A rapid pulsing, high intensity, incoherent light is produced by selectively energizing a plurality of discharge lamps with a triggering circuit. Each lamp is connected to a capacitor, and a

power supply is electrically connected to all but one of the capacitors. This last named capacitor is electrically connected to a discharge lamp which is connected to the triggering circuit.
Official Gazette of the U.S. Patent Office



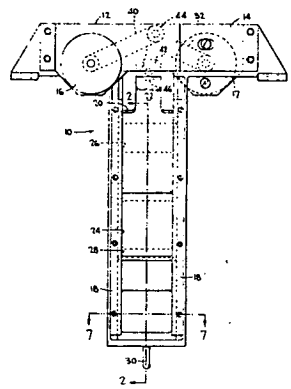
N74-20860* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
AMPLITUDE STEERED ARRAY Patent
Fred J. Dietrich (Philco-Ford Corp., Palo Alto, Calif.), George J. Koloboff (Philco-Ford Corp., Palo Alto, Calif.), Robert J. Martel (Westinghouse Elec. Corp., Pittsburgh), and Chester C. Johnson, inventors (to NASA) Issued 23 Apr. 1974 8 p Filed 15 Jun. 1972 Supersedes N73-32117 (11 - 23, p 2764) Sponsored by NASA
(NASA-Case-GSC-11446-1; US-Patent-3,806,932;
US-Patent-Appl-SN-263230; US-Patent-Class-343-100SA;
US-Patent-Class-343-100ST; US-Patent-Class-343-854;
US-Patent-Class-343-DIG.2) Avail: US Patent Office CSCL 09A

A spin stabilized satellite has an electronically despun antenna array comprising a multiplicity of peripheral antenna elements. A high gain energy beam is established by connecting a suitable fraction or array of the elements in phase. The beam is steered or caused to scan by switching elements in sequence into one end of the array as elements at the other end of the array are switched out. The switching transients normally associated with such steering are avoided by an amplitude control system. Instead of abruptly switching from one element to the next, a fixed value of power is gradually transferred from the element at the trailing edge of the array to the element next to the leading edge.
Official Gazette of the U.S. Patent Office



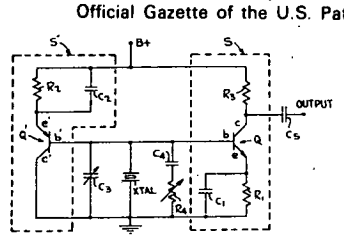
N74-20861* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
ROTARY SOLENOID SHUTTER DRIVE ASSEMBLY AND ROTARY INERTIA DAMPER AND STOP PLATE ASSEMBLY Patent
Walter L. Cable (RCA, Princeton, N. J.) and Harold B. Dougherty, inventors (to NASA) (RCA, Princeton, N. J.) Issued 16 Apr. 1974 8 p Filed 21 May 1973 Supersedes N73-26198 (11 - 17, p 2003) Sponsored by NASA
(NASA-Case-GSC-11560-1; US-Patent-3,804,506;
US-Patent-Appl-SN-361906; US-Patent-Class-354-234;
US-Patent-Class-95-53EA; US-Patent-Class-350-269) Avail: US Patent Office CSCL 09E

A camera shutter assembly composed of a pair of superposed opaque planar shutter blades, each having an aperture and being arranged for reciprocal linear movement is disclosed. A pair of rotary solenoids, each connected to one of the blades by a linkage and arranged to be actuated separately at a predetermined interval is provided. An inertia damper and stop plate is built into each solenoid to prevent rebound.
Official Gazette of the U.S. Patent Office



N74-20862* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
ULTRA-STABLE OSCILLATOR WITH COMPLEMENTARY TRANSISTORS Patent
Leonard L. Kleinberg, inventor (to NASA) Issued 23 Apr. 1974 6 p Filed 14 Dec. 1972 Supersedes N73-16185 (11 - 07, p 0761)
(NASA-Case-GSC-11513-1; US-Patent-3,806,831;
US-Patent-Appl-SN-315069; US-Patent-Class-331-116R;
US-Patent-Class-331-108A; US-Patent-Class-331-115;
US-Patent-Class-331-159) Avail: US Patent Office CSCL 09E

A high frequency oscillator, having both good short and long term stability, is formed by including a piezoelectric crystal in the base circuit of a first bi-polar transistor circuit, the bi-polar transistor itself operated below its transitional frequency and having its emitter load chosen so that the input impedance, looking into the base thereof, exhibits a negative resistance in parallel with a capacitive reactance. Combined with this basic circuit is an auxiliary, complementary, second bi-polar transistor circuit of the same form with the piezoelectric crystal being common to both circuits. By this configuration small changes in quiescent current are substantially cancelled by opposite variations in the second bi-polar transistor circuit, thereby achieving from the oscillator a signal having its frequency of oscillation stable over long time periods as well as short time periods.
Official Gazette of the U.S. Patent Office



N74-20863* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

HIGH EFFICIENCY MULTIFREQUENCY FEED Patent

James S. Ajioka (Hughes Aircraft Corp., Los Angeles), George I. Tsuda (Hughes Aircraft Corp., Los Angeles), and William A. Leeper, inventors (to NASA) (Hughes Aircraft Corp., Los Angeles) Issued 9 Apr. 1974 11 p Filed 14 Apr. 1972 Sponsored by NASA (NASA-Case-GSC-113173; US-Patent-3,803,617; US-Patent-Appl-SN-244158; US-Patent-Class-343-730; US-Patent-Class-343-786; US-Patent-Class-343-797; US-Patent-Class-343-853) Avail: US Patent Office CSCL 09A

Antenna systems and particularly compact and simple antenna feeds which can transmit and receive simultaneously in at least three frequency bands, each with high efficiency and polarization diversity are described. The feed system is applicable for frequency bands having nominal frequency bands with the ratio 1:4:6. By way of example, satellite communications telemetry bands operate in frequency bands 0.8 - 1.0 GHz, 3.7 - 4.2 GHz and 5.9 - 6.4 GHz. In addition, the antenna system of the invention has monopulse capability for reception with circular or diverse polarization at frequency band 1.

Official Gazette of the U.S. Patent Office

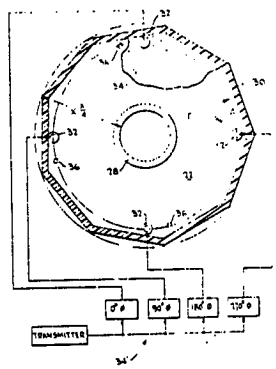
N74-20864* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

TURNSTILE SLOT ANTENNA Patent

Robert E. Munson, inventor (to NASA) (Ball Brothers Res. Corp., Boulder, Colo.) Issued 16 Apr. 1974 5 p Filed 27 Sep. 1972 Supersedes N73-11206 (11 - 02, p 0149) Sponsored by NASA (NASA-Case-GSC-11428-1; US-Patent-3,805,266; US-Patent-Appl-SN-292685; US-Patent-Class-343-708; US-Patent-Class-343-769; US-Patent-Class-343-853) Avail: US Patent Office CSCL 17B

A turnstile slot antenna is disclosed, the antenna being for and integral with a spacecraft having a substantially cylindrical body portion. The antenna comprises a circumferential slot about the periphery of the spacecraft body portion with an annular wave guide cavity defining a radial transmission line disposed within the spacecraft body portion behind and in communication with the circumferential slot. Feed stubs and associated transmission apparatus are provided to excite the annular cavity in quadrature phase such that an omnidirectional, circularly polarized, rotating radiation pattern is generated. The antenna of the instant invention has utility both as a transmitting and receiving device, and ensures continuous telemetry and command coverage with the spacecraft.

Official Gazette of the U.S. Patent Office

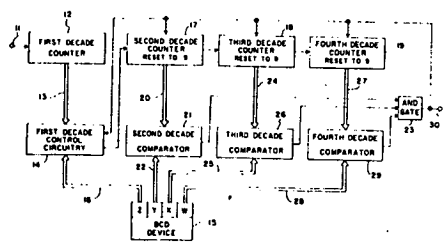


10 ELECTRONICS

Includes circuit theory; and feedback and control theory. For applications see: 09 Electronic Equipment. For related information see specific Physics categories.

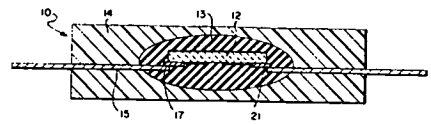
N74-10223* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
TECHNIQUE FOR EXTENDING THE FREQUENCY RANGE OF DIGITAL DIVIDERS Patent
Walt C. Long and Joan H. Middleton, inventors (to NASA) Issued 9 Oct. 1973 6 p Filed 30 Mar. 1972 Supersedes N72-27255 (10 - 18, p 2404)
(NASA-Case-LAR-10730-1; US-Patent-3,764,790; US-Patent-Appl-SN-239573; US-Patent-Class-235-92CA; US-Patent-Class-235-92DM; US-Patent-Class-307-225R; US-Patent-Class-328-48; US-Patent-Class-235-150.3) Avail: US Patent Office CSCL 09C

A technique for extending the frequency range of a presettable digital divider is described. The conventional digital divider consists of several counter stages with the count of each stage compared to a preselected number. When the counts for all stages are equal to the preselected numbers, an output pulse is generated and all stages are reset. For high input frequencies, the least significant stage of the divider has to be reset in a very short time. This limits the frequency that can be handled by the conventional digital divider. This invention provides a technique in which the second least significant and higher stages are reset and the least significant stage is permitted to free-run. Hence, the time in which the reset operation can be performed is increased thereby extending the frequency range of the divider.
Official Gazette of the U.S. Patent Office



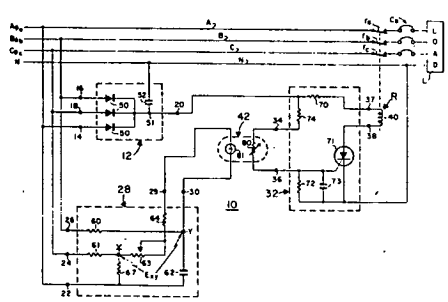
N74-12951* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
INTEGRATED CIRCUIT PACKAGE WITH LEAD STRUCTURE AND METHOD OF PREPARING THE SAME Patent
Bobby W. Kennedy, inventor (to NASA) Issued 11 Dec. 1973 6 p Filed 27 Mar. 1972 Supersedes N72-21274 (10-12, p 1590
(NASA-Case-MFS-21374-1; US-Patent-3,778,685; US-Patent-Appl-SN-238047; US-Patent-Class-317-234R; US-Patent-Class-317-234E; US-Patent-Class-317-234F; US-Patent-Class-317-234M; US-Patent-Class-317-234N) Avail: US Patent Office CSCL 09C

A beam-lead integrated circuit package assembly including a beam-lead integrated circuit chip, a lead frame array bonded to projecting fingers of the chip, a rubber potting compound disposed around the chip, and an encapsulating molded plastic is described. The lead frame array is prepared by photographically printing a lead pattern on a base metal sheet, selectively etching to remove metal between leads, and plating with gold. Joining of the chip to the lead frame array is carried out by thermocompression bonding of mating goldplated surfaces. A small amount of silicone rubber is then applied to cover the chip and bonded joints, and the package is encapsulated with epoxy resin, applied by molding.
Official Gazette of the U.S. Patent Office



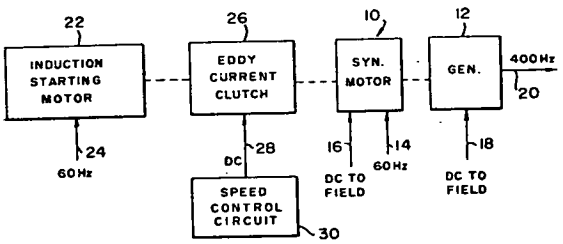
N74-14956* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
PHASE PROTECTION SYSTEM FOR ac POWER LINES Patent
Wing J. Wong, inventor (to NASA) (N. Am. Rockwell Corp., Downey, Calif.) Issued 1 Jan. 1974 5 p Filed 29 Sep. 1972 Supersedes N72-33232 (10 - 24, p 3195) Sponsored by NASA
(NASA-Case-MSC-17832-1; US-Patent-3,783,354; US-Patent-Appl-SN-293727; US-Patent-Class-317-33SC; US-Patent-Class-317-43; US-Patent-Class-317-47; US-Patent-Class-317-48; US-Patent-Class-307-127; US-Patent-Class-317-46) Avail: US Patent Office CSCL 09C

The system described provides protection for phase sensitive loads from being or remaining connected to ac power lines whenever a phase reversal occurs. It comprises a solid state phase detection circuit, a dc power relay circuit, an ac-to-dc converter for energizing the relay circuit, and a bistable four terminal transducer coupled between the phase detection circuit and the power relay circuit, for controlling both circuits.
Official Gazette of the U.S. Patent Office



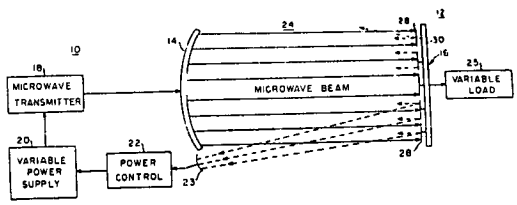
N74-17949*# National Aeronautics and Space Administration. Pasadena Office, Calif.
MOTOR RUN-UP SYSTEM Patent Application
John J. Daeges, inventor (to NASA) (JPL) Filed 7 Mar. 1974 22 p
(Contract NAS7-100)
(NASA-Case-NPO-13374-1; US-Patent-Appl-SN-449118) Avail: NTIS HC $4.25 CSCL 09C

A starting system for bringing a large synchronous motor up to speed to prevent large power line disturbances at the moment the motor is connected to the power line is introduced. The system includes a digital counter which generates a count determined by the difference in frequency between the power line and a small current generated by the synchronous motor, a latch which stores the count, and a comparator which compares the stored count with a newly generated count to determine whether the synchronous motor is accelerating or decelerating. Signals generated by the counter and comparator control current to a clutch that couples a starting motor to the large synchronous motor.
NASA



N74-19870* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
MICROWAVE POWER TRANSMISSION SYSTEM WHEREIN LEVEL OF TRANSMITTED POWER IS CONTROLLED BY REFLECTIONS FROM RECEIVER Patent
William J. Robinson, Jr., inventor (to NASA) Issued 5 Mar. 1974 5 p Filed 13 Mar. 1973 Supersedes N73-20257 (11 - 11, p 1264)
(NASA-Case-MFS-21470-1; US-Patent-3,795,910; US-Patent-Appl-SN-340871; US-Patent-Class-343-7.5; US-Patent-Class-325-62; US-Patent-Class-333-17; US-Patent-Class-343-17.7) Avail: US Patent Office CSCL 09C

A microwave, wireless, power transmission system is described in which the transmitted power level is adjusted to correspond with power required at a remote receiving station. Deviations in power load produce an antenna impedance mismatch causing variations in energy reflected by the power receiving antenna employed by the receiving station. The variations in reflected energy are sensed by a receiving antenna at the transmitting station and used to control the output power of a power transmitter. Official Gazette of the U.S. Patent Office

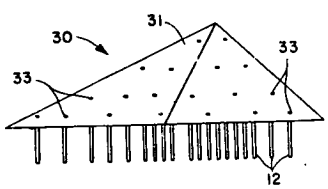


11 FACILITIES, RESEARCH AND SUPPORT

Includes airports; lunar and planetary bases including associated vehicles; ground support systems; related logistics; simulators; test facilities (e.g., rocket engine test stands, shock tubes, and wind tunnels); test ranges; and tracking stations.

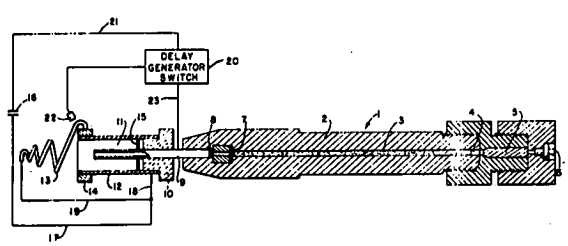
N74-17955* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
WIND TUNNEL MODEL AND METHOD Patent
Charlie M. Jackson, Jr. and Dallas G. Summerfield, inventors (to NASA) Issued 12 Feb. 1974 4 p Filed 19 Jun. 1972 Supersedes N72-27272 (10 - 18, p 2407)
(NASA-Case-LAR-10812-1; US-Patent-3,791,207; US-Patent-Appl-SN-263815; US-Patent-Class-73-147) Avail: US Patent Office CSCL 14B

The design and development of a wind tunnel model equipped with pressure measuring devices are discussed. The pressure measuring orifices are integrally constructed in the wind tunnel model and do not contribute to distortions of the aerodynamic surface. The construction of a typical model is described and a drawing of the device is included. P.N.F.



N74-18891*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
TWO STAGE LIGHT GAS PLASMA PROJECTILE ACCELERATOR Patent Application
Edward L. Shriver, David W. Jex, and Edward B. Igenbergs, inventors (to NASA) (NAS-NRC) Filed 29 Jan. 1974 10 p
(NASA-Case-MFS-22287-1; US-Patent-Appl-SN-438147) Avail: NTIS HC $4.00 CSCL 14B

A device for accelerating a projectile to extremely high velocities, composed of a light gas accelerator to impart an initial high velocity to the projectile and a plasma accelerator and compressor receiving the moving projectile and accelerating it to higher velocities, is described. A capacitor bank is discharged into a plasma generator in timed relationship to the position of the projectile so that the moving plasma drags the projectile along with it. Projectile velocities in the order of 20 kilometers per second, the average meteoroid velocity, can be attained, whereby the accelerator finds particular utility in the field of meteoroid simulation. NASA



12 FLUID MECHANICS

Includes boundary-layer flow; compressible flow; gas dynamics; hydrodynamics; and turbulence. For related information see also: 01 Aerodynamics; and 33 Thermodynamics and Combustion.

No abstracts in this subject category.

13 GEOPHYSICS

Includes aeronomy; upper and lower atmosphere studies; oceanography; cartography; and geodesy. For related information see also: 20 Meteorology; 29 Space Radiation; and 30 Space Sciences.

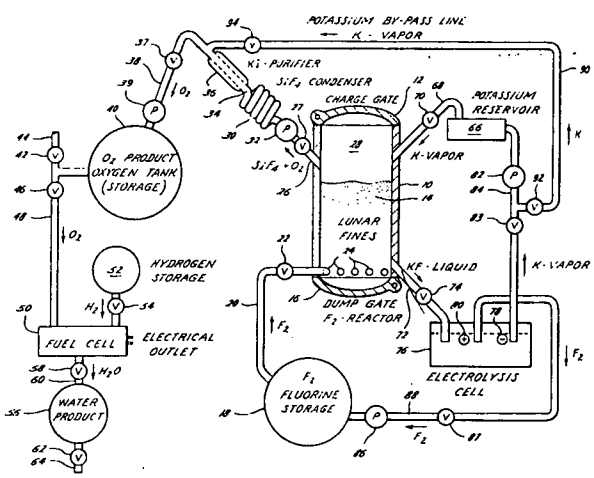
N74-13011* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.

METHOD FOR OBTAINING OXYGEN FROM LUNAR OR SIMILAR SOIL Patent

William R. Downs, inventor (to NASA) Issued 20 Nov. 1973 5 p Filed 28 Feb. 1972 Supersedes N72-20355 (10 - 11, p 1467)

(NASA-Case-MSC-12408-1; US-Patent-3,773,913; US-Patent-Appl-SN-229916; US-Patent-Class-423-579) Avail: US Patent Office CSCL 03B

Recovery of oxygen from soil containing metal oxides such as alumina, silica, calcia, magnesia, and ilmenite wherein the material containing the oxides is placed in a vessel and reacted with fluorine to provide oxygen and metal fluorides. The oxygen produced from the reaction is recovered and stored, after further purifying processes, and the metal fluorides are further reacted with potassium vapor to provide potassium fluoride and free metals. The potassium fluoride is than subjected to electrolysis whereby the potassium and fluorine are separated and are recycled for further use in the system. Valuable free metals are recovered for other uses. Official Gazette of the U.S. Patent Office



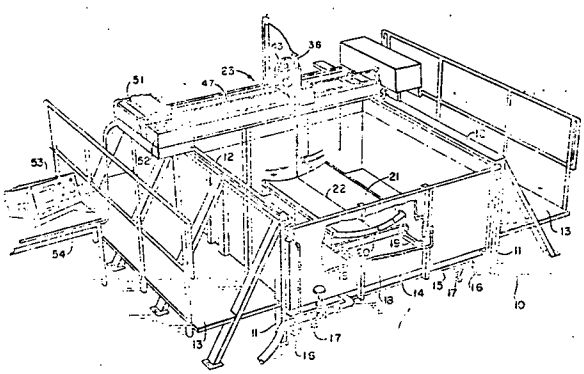
14 INSTRUMENTATION AND PHOTOGRAPHY

Includes design, installation, and testing of instrumentation systems; gyroscopes; measuring instruments and gages; recorders; transducers; aerial photography; and telescopes and cameras.

N74-10415* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
ULTRASONIC SCANNER FOR RADIAL AND FLAT PANELS Patent
Robert L. Spencer and Ewing K. Hill, inventors (to NASA) Issued 16 Oct. 1973 8 p Filed 27 Mar. 1972 Supersedes N72-27421 (10 - 18, p 2426)
(NASA-Case-MFS-20335-1; US-Patent-3,765,229; US-Patent-Appl-SN-238263; US-Patent-Class-73-67.8S) Avail: US Patent Office CSCL 14B

An ultrasonic scanning mechanism is described that scans panels of honeycomb construction or with welded seams. It incorporates a device which by simple adjustment is adapted to scan either a flat panel or a radial panel. The supporting structure takes the form of a pair of spaced rails. An immersion tank is positioned between the rails and below their level. A work holder is mounted in the tank and is adapted to hold the flat or radial panel. A traveling bridge is movable along the rails and a carriage is mounted on the bridge.

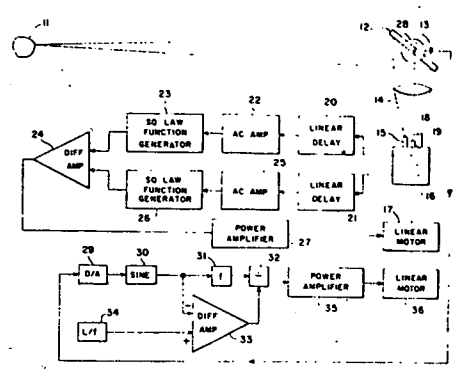
Official Gazette of the U.S. Patent Office



N74-10420*# National Aeronautics and Space Administration, Langley Research Center, Langley Station, Va.
AUTOMATIC FOCUS CONTROL FOR FACSIMILE CAMERAS Patent Application
Archibald R. Sinclair, Ernest E. Burcher, and Stephen J. Katzberg, inventors (to NASA) Filed 15 Oct. 1973 12 p
(NASA-Case-LAR-11213-1; US-Patent-Appl-SN-406715) Avail: NTIS HC $3.00 CSCL 14E

A movable stage contains two photodetectors for focusing, as well as an imaging sensor. The imaging sensor produces the video data in the fashion standard to facsimile cameras. The two photodetectors are placed with one closer to the lens of the facsimile camera than the imaging sensor and with the other farther away. The movable stage is coupled to a linear motor which is driven from an error signal generated by the electronics. In order to insure that the electrical signals at the output of the two photodetectors and the imaging sensor are in phase, electrical delays are connected to the outputs of the two photodetectors.

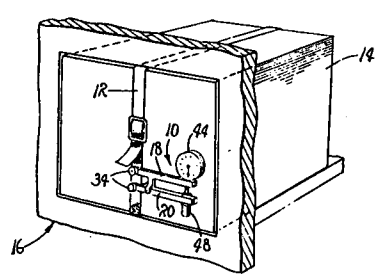
NASA



N74-10421*# McDonnell-Douglas Astronautics Co., Newport Beach, Calif.
A METER FOR USE IN DETECTING TENSION IN STRAPS HAVING PREDETERMINED ELASTIC CHARACTERISTICS Patent Application
George V. Buhler and Dale E. Havens, inventors (to NASA) Filed 11 Oct. 1973 14 p Sponsored by NASA
(NASA-Case-MFS-22189-1; US-Patent-Appl-SN-405342) Avail: NTIS HC $3.00 CSCL 14B

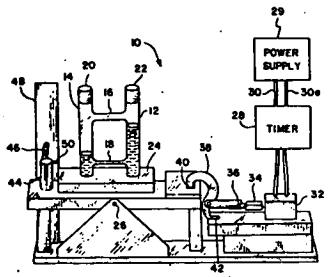
A description is given of a meter for use in detecting tension in fabric straps having predetermined elastic characteristics. The meter is characterized by a pair of elongated arms disposed in juxtaposed, substantial parallelism, a clevis interconnecting the arms for pivotal motion in a common plane about a common axis, and a pair of juxtaposed receivers integrally related with the first ends of the arms and supported for arcuate motion. The receivers are configured to receive and secure a pair of adjacent portions of a fabric strap, and a pressure-responsive device. The device is mounted at the second ends of the arms for measuring and indicating the magnitude of arcuate motion imparted to the receivers as tension-induced stretching of the strap occurs.

NASA



N74-10422*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
AUTOMATIC MICROBIAL TRANSFER DEVICE Patent Application
Judd R. Wilkins and Stacey M. Mills, inventors (to NASA) Filed 26 Oct. 1973 10 p
(NASA-Case-LAR-11354-1; US-Patent-Appl-SN-409990) Avail: NTIS HC $3.00 CSCL 14B

An apparatus is disclosed for automatically transferring a predetermined amount of inoculated culture from a first container into a second container which has a sterile culture. The containers rest on the top of a pivoted support surface, where a horizontally disposed conduit connects them. The support surface is pivoted from its normal horizontal position by a solenoid which is activated under the control of an electrical timer. The solenoid is connected to a catch which may be disposed in two positions. When the solenoid is inactive, the catch is connected to the first end of the support surface to hold it in its normal horizontal position. When the solenoid is activated, the catch releases the support surface into a freely pivoting state. Upon release of the catch from the support surface, a weight disposed on the second end of the support surface tips the support surface from its normal horizontal position causing the predetermined volume of inoculated culture to flow into the second container. NASA

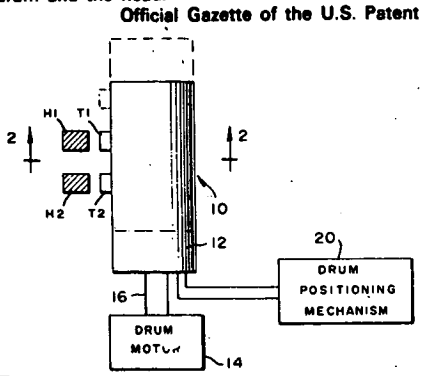


N74-11283* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

IMAGE DATA RATE CONVERTER HAVING A DRUM WITH A FIXED HEAD AND A ROTATABLE HEAD Patent

Frederic C. Billingsley, inventor (to NASA) Issued 6 Nov. 1973 5 p Filed 22 Feb. 1972 Supersedes N72-22453 (10-13, p 1749) Sponsored by NASA
(NASA-Case-NPO-11659-1; US-Patent-3,770,903; US-Patent-Appl-SN-228189; US-Patent-Class-179-100.2MD; US-Patent-Class-178-6.6DD; US-Patent-Class-179-100.2T; US-Patent-Class-340-174.1L) Avail: US Patent Office CSCL 14C

A data-rate converter is disclosed comprising a rotatable data-storing drum with at least one fixed read/record head and a rotatable read/record head. The latter is rotatable in a circular path about the drum axis of rotation. The drum is positionable in any one of a plurality of axial positions with respect to the heads, so that at least one drum track is aligned with the fixed head in one drum position and with the rotatable head in another drum position. When a track is aligned with the fixed head, data may be recorded therin or read out therefrom at a rate which is a function of drum rotation, while when aligned with the rotatable head, data may be recorded or read out at a rate which is a function of the rates and directions of rotation of both the drum and the head.
Official Gazette of the U.S. Patent Office

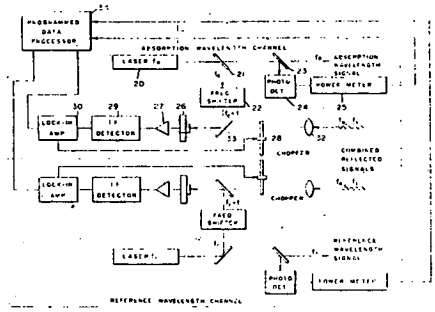


N74-11284* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

MONITORING ATMOSPHERIC POLLUTANTS WITH A HETERODYNE RADIOMETER TRANSMITTER-RECEIVER Patent

Robert T. Menzies, inventor (to NASA) Issued 16 Oct. 1973 9 p Filed 24 Mar. 1972 Supersedes N73-29436 (11 - 20, p 2419) Sponsored by NASA
(NASA-Case-NPO-11919-1; US-Patent-3,766,380; US-Patent-Appl-SN-237694; US-Patent-Class-250-343) Avail: US Patent Office CSCL 14B

The presence of selected atmospheric pollutants can be determined by transmitting an infrared beam of proper wavelength through the atmosphere, and detecting the reflections of the transmitted beam with a heterodyne radiometer transmitter-receiver using part of the laser beam as a local oscillator. The particular pollutant and its absorption line strength to be measured are selected by the laser beam wave length. When the round-trip path for the light is known or measured, concentration can be determined. Since pressure (altitude) will affect the shape of the molecular absorption line of a pollutant, tuning the laser through a range of frequencies, which includes a part of the absorption line of the pollutant of interest, yields pollutant altitude data from which the altitude and altitude profile is determined. Official Gazette of the U.S. Patent Office

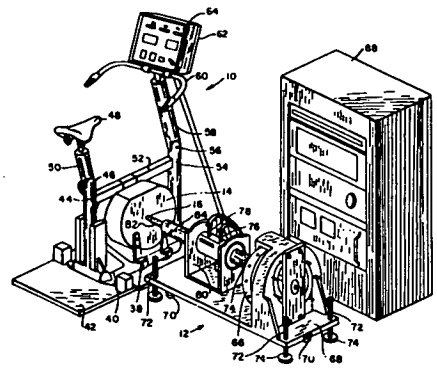


N74-11288*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

ERGOMETER CALIBRATOR Patent Application

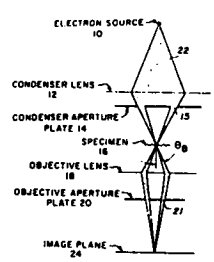
Raymond L. Gause, inventor (to NASA) Filed 31 Oct. 1973 13 p
(NASA-Case-MFS-21045-1; US-Patent-Appl-SN-411572) Avail: NTIS HC $3.00 CSCL 14B

The invention is directed to an apparatus for accurately calibrating ergometers so that the work rate produced during exercising on the ergometer can be determined accurately. The apparatus can be used to calibrate any ergometer that utilizes a rotating shaft. The apparatus includes a D.C. motor which is coupled directly to a shaft upon which peddles are normally mounted for rotating the ergometer. A torque sensor is coupled to the shaft which indicates the torque required to rotate the shaft. A tachometer is also coupled to the shaft for indicating the speed of rotation of the shaft. The signals from the torque sensor and the tachometer are fed into a power computer which computes the wattage being used by the motor. Thus, by comparing the output signal produced by the power computer with the output signal produced by the ergometer it can be determined if the ergometer is accurately calibrated. NASA



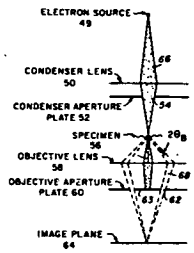
N74-12190*# National Academy of Sciences - National Research Council, Washington, D.C.
ELECTRON MICROSCOPE APERTURE SYSTEM Patent Application
Klaus Heinemann, inventor (to NASA) Filed 28 Jun. 1973 17 p Sponsored by NASA
(NASA-Case-ARC-10448-2; US-Patent-Appl-SN-374424) Avail: NTIS HC $3.00 CSCL 20F

A method of making an electron microscope annular objective lens aperture is described. The method includes: (1) overlaying a specimen aperture base with a first layer of a copper grid and a second layer of a thin collodium film, (2) evaporating a thin conductive metallic layer onto the upper surface of the collodium film, (3) inserting the prepared aperture base into the objective slider of the electron microscope and imaging the condenser aperture onto the image plane and causing a decontamination layer to be deposited on the illuminated area of the metal layer, (4) electrolytically depositing a metal film onto the metallic layer, and (5) removing the contamination layer and underlying layers by ion etching from the side opposite the metallic film. NASA



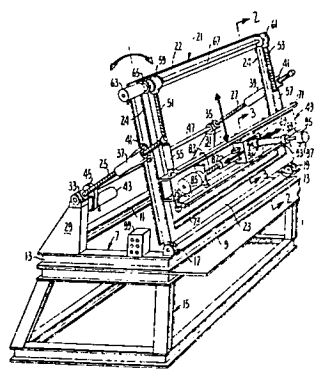
N74-12191*# National Academy of Sciences - National Research Council, Washington, D.C.
ELECTRON MICROSCOPE APERTURE SYSTEM Patent Application
Klaus Heinemann, inventor (to NASA) Filed 23 Jul. 1973 17 p Sponsored by NASA
(NASA-Case-ARC-10448-3; US-Patent-Appl-SN-381848) Avail: NTIS HC $3.00 CSCL 20F

An electron microscope is described which includes an electron source, a condenser lens having either a circular aperture for focusing a solid cone of electrons onto a specimen or an annular aperture for focusing a hollow cone of electrons onto the specimen, and an objective lens having an annular objective aperture, for focusing electrons passing through the specimen onto an image plane. A method for making the annular objective aperture using electron imaging, electrolytic deposition and ion etching techniques is given. NASA



N74-13129* National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
THREE-AXIS ADJUSTABLE LOADING STRUCTURE Patent
Edward J. Lynch and Darwyn T. Gray, inventors (to NASA) Issued 4 Dec. 1973 7 p Filed 16 May 1972 Supersedes N73-30416 (11-21, p 2547)
(NASA-Case-FRC-10051-1; US-Patent-3,776,028; US-Patent-Appl-SN-253725; US-Patent-Class-73-88R; US-Patent-Class-254-93R) Avail: US Patent Office CSCL 14B

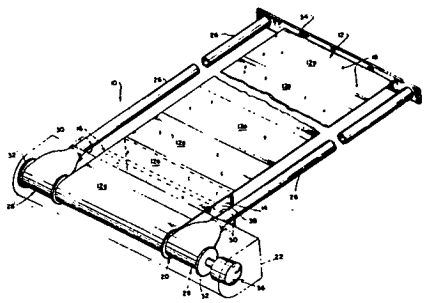
A three axis adjustable loading structure for testing the movable surfaces of aircraft by applying pressure, is described. The device has three electric drives where the wall angle, horizontal position, and vertical position of the test device can be rapidly and accurately positioned.
Official Gazette of the U.S. Patent Office



N74-13130* TRW, Inc., Redondo Beach, Calif.
METHOD OF AND DEVICE FOR DETERMINING THE CHARACTERISTICS AND FLUX DISTRIBUTION OF MICROMETEORITES Patent
Hans F. Meissinger, inventor (to NASA) Issued 14 Aug. 1973 7 p Filed 13 Jan. 1971 Sponsored by NASA
(NASA-Case-NPO-12127-1; US-Patent-3,752,996; US-Patent-Appl-SN-106106; US-Patent-Class-250-219DF; US-Patent-Class-250-83CD) Avail: US Patent Office CSCL 14B

A micrometeorite impact sensing method of and device for determining the characteristics and flux distribution of micrometeorites are discussed. The method consists of exposing to the micrometeorite environment, a panel of sheet material of a thickness to be punctured by impacting micrometeorites and then scanning the panel with a scanner which produces an output representing the number and size of the puncture holes in the panel. After, exposure, the panel is scanned for puncture holes by illuminating one side of the panel and retracting the panel into its stowage container past a photoelectric scanner which produces an output representing the incident light.

Official Gazette of the U.S. Patent Office



N74-13131* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

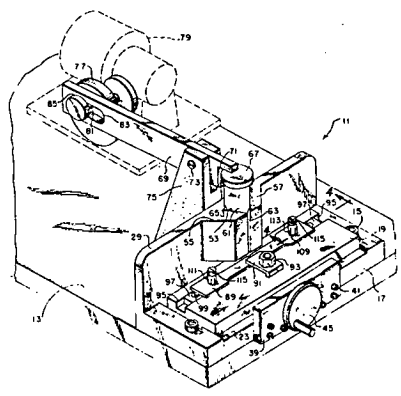
VEE-NOTCHING DEVICE Patent

Raymond A. Spier, inventor (to NASA) Issued 11 Dec. 1973 5 p Filed 23 Sep. 1971 Supersedes N72-11372 (10 - 02, p 0198)

(NASA-Case-MFS-20730-1; US-Patent-3,777,605; US-Patent-Appl-SN-182977; US-Patent-Class-83-452; US-Patent-Class-83-602; US-Patent-Class-83-917; US-Patent-Class-269-48.1) Avail: US Patent Office CSCL 14B

A device is described for forming vee-notches in tensile test specimens comprising a vertically reciprocating, triangular, triple-edged cutting tool guided in a corresponding triangular slot. The specimen to be vee-notched is mounted on a carriage that is movable toward and away from the cutting tool. The specimen is precisely positioned on the carriage by tapered studs that extend into holes in the specimen and are used to expand spring collets against the wall of the holes.

Official Gazette of the U.S. Patent Office



N74-13132* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

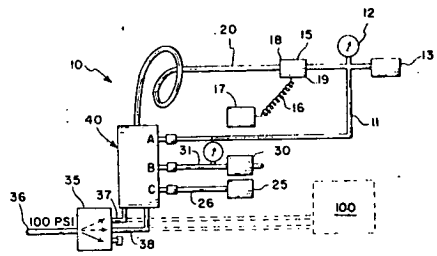
SYSTEM FOR CALIBRATING PRESSURE TRANSDUCER Patent

Garland N. Rollins, inventor (to NASA) Issued 11 Dec. 1973 8 p Filed 30 Mar. 1972 Supersedes N72-28462 (10 - 19, p 2564)

(NASA-Case-LAR-10910-1; US-Patent-3,777,546; US-Patent-Appl-SN-239577; US-Patent-Class-73-4R; US-Patent-Class-73-420) Avail: US Patent Office CSCL 14B

A system for calibrating a pressure transducer which has a reference portion and an active portion is reported. A miniature selector valve is positioned immediately adjacent the pressure transducer. A reference pressure, known pressure, and unknown pressure can be selectively admitted to the active side of the pressure transducer by the selector valve to enable calibration of the transducer. A valve admits pressure to the selector valve which has a piston and floating piston arrangement which allows proper selection with very small linear movement.

Official Gazette of the U.S. Patent Office



N74-13146*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

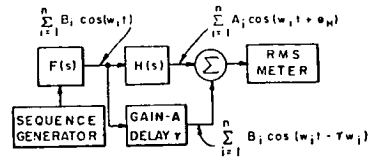
PSEUDO-NOISE TEST SET FOR COMMUNICATION SYSTEM EVALUATION Patent Application

Gabriel R. Wallace, William E. Salter (Sperry Rand Corp.), Glenn D. Weathers (Sperry Rand Corp.), and Sidney S. Gussow, inventors (to NASA) (Sperry Rand Corp.) Filed 28 Nov. 1973 18 p (Contract NAS8-21812)

(NASA-Case-MFS-22671-1; US-Patent-Appl-SN-419831) Avail: NTIS HC $3.00 CSCL 14B

A test set for communications systems is described. The set includes a pseudo-noise sequence generator that provides a test signal which is fed to a pair of signal channels. The first channel includes a spectrum shaping filter and a conditioning amplifier. The second channel includes a variable delay circuit, a spectrum shaping filter matched to the first filter, and an amplifier. The output of the first channel is applied to the system under test. The output of the system and the output of the second channel are compared to determine the degree of distortion suffered by the test signal due to the communications system.

NASA



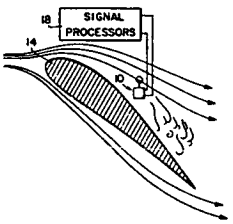
N74-14115*# Santa Clara Univ., Calif.

SYSTEM FOR MEASURING DRAG FORCES IN A TURBULENTLY FLOWING FLUID Patent Application

Dah Yu Cheng, inventor (to NASA) Filed 12 Dec. 1973 19 p Sponsored by NASA

(NASA-Case-ARC-10755-1; US-Patent-Appl-SN-424013) Avail: NTIS HC $3.00 CSCL 14B

A system for measuring the drag forces in a turbulently flowing fluid is described. The system consists of a sensing apparatus for dynamically sensing the mainstream and the cross velocity components of the fluid, a transducer to provide two alternating current electrical output signals representative of the velocity components, and signal processors to process and shape the electrical signals. A numerical analysis of the performance of the sensors is provided. NASA



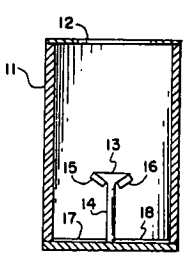
N74-15089* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

ATTITUDE SENSOR Patent

Arthur L. Newcomb, Jr. and Aubrey G. Price, inventors (to NASA) Issued 25 Dec. 1973 4 p Filed 14 Sep. 1972 Supersedes N73-11406 (11 - 02, p 0174)

(NASA-Case-LAR-10586-1; US-Patent-3,780,966; US-Patent-Appl-SN-289049; US-Patent-Class-244-1SA; US-Patent-Class-102-70.2R; US-Patent-Class-244-3.16; US-Patent-Class-250-203R; US-Patent-Class-250-237R) Avail: US Patent Office CSCL 22B

A device for controlling the attitude of a spacecraft is described. The device consists of two light sensors on a spacecraft that are mounted beneath a baffle which divides the light from a light source such as the sun or a star. The divided light reflects off of two reflective surfaces onto the two light sensors. When the spacecraft assumes its normal attitude, the baffle divides the light source into two equal parts, causing the two light sensors to produce equal outputs. When the light is equally detected, the stabilizing system is disconnected. Deviations from the normal attitude cause unequal distribution of the light source and energize the stabilizing system. P.N.F.



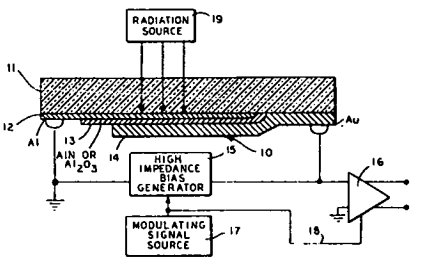
N74-15090* National Aeronautics and Space Administration. Pasadena Office, Calif.

USE OF THIN FILM LIGHT DETECTOR Patent

George W. Lewicki, (JPL) and Joseph Maserjian, (JPL) Issued 25 Dec. 1973 10 p Filed 31 May 1972 Supersedes N72-28442 (10 - 19, p 2562) Continuation-in-part of abandoned US Patent Appl. SN-88435, filed 10 Nov. 1970 Sponsored by NASA

(NASA-Case-NPO-11432-2; US-Patent-3,781,549; US-Patent-Appl-SN-258152; US-Patent-Class-250-211J; US-Patent-Class-250-214; US-Patent-Class-317-235N; US-Patent-Appl-SN-88435) Avail: US Patent Office CSCL 14B

A photovoltaic cell device with a trapezoidal barrier is described. An aluminum, magnesium, or tantalum base is vapor deposited on a quartz substrate. An oxide or nitride film of the base metal is produced as an insulator by reaction in a glow discharge plasma to a thickness of less than 100 Angstroms. A metal, preferably gold, conter-electrode is vapor deposited on the insulating layer. A bias generator of high impedance is used to set and shift or modulate the spectral response of the device. Official Gazette of the U.S. Patent Office



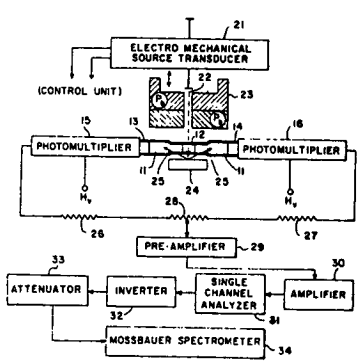
N74-15091* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

MOSSBAUER SPECTROMETER RADIATION DETECTOR Patent

Jag J. Singh, inventor (to NASA) Issued 25 Dec. 1973 4 p Filed 8 Dec. 1972 Supersedes N73-13433 (11 - 04, p 0421)

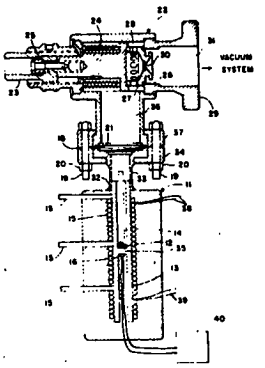
(NASA-Case-LAR-11155-1; US-Patent-3,781,562; US-Patent-Appl-SN-313381; US-Patent-Class-250-360; US-Patent-Class-250-361; US-Patent-Class-250-369; US-Patent-Class-250-492) Avail: US Patent Office CSCL 14B

A Mossbauer spectrometer with high efficiencies in both transmission and backscattering techniques is described. The device contains a sodium iodide crystal for detecting radiation caused by the Mossbauer effect, and two photomultipliers to collect the radiation detected by the crystal. When used in the transmission technique, the sample or scatterer is placed between the incident radiation source and the detector. When used in a backscattering technique, the detector is placed between the incident radiation source and the sample of scatterer such that the incident radiation will pass through a hole in the crystal and strike the sample. Diagrams of the instrument are provided. P.N.F.



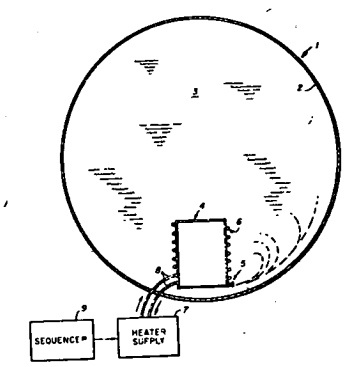
N74-15092* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
INSITU TRANSFER STANDARD FOR UTLRAHIGH VACUUM GAGE CALIBRATION Patent
Ronald A. Outlaw, Richard E. Stell, and Ronald F. Hoyt, inventors (to NASA) Issued 25 Dec. 1973 7 p Filed 14 Jul. 1972 Supersedes N72-28460 (10 - 19, p 2564)
(NASA-Case-LAR-10862-1; US-Patent-3,780,563; US-Patent-Appl-SN-271951; US-Patent-Class-73-4V) Avail: US Patent Office CSCL 14B

A compact insitu calibration assembly, for ultrahigh vacuum gauges is described. The system depends on the repeatable generation of a specific gas pressure by the dissociation of a solid solution chemical compound when subjected to a given temperature. A precise temperature measurement is related to the pressure generated within the vacuum by the properties of the solid solution compound. This accurately establishes the gas pressure which in turn is used to calibrate a vacuum gauge. Also included is a metering orifice used in the calibration system and which is made movable to facilitate the degassing bakeout required in ultrahigh vacuum devices.
Official Gazette of the U.S. Patent Office



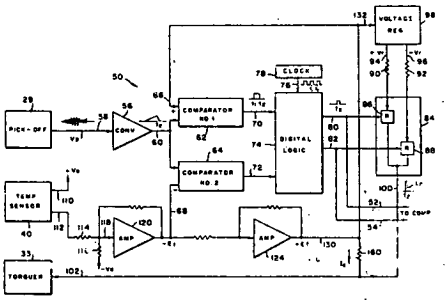
N74-15093* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
HEATER-MIXER FOR STORED FLUIDS Patent
Thomas N. Canning, inventor (to NASA) Issued 1 Jan. 1974 4 p Filed 11 Aug. 1972 Supersedes N73-30415 (11 - 21, p 2547)
(NASA-Case-ARC-10442-1; US-Patent-3,782,698; US-Patent-Appl-SN-280032; US-Patent-Class-259-60; US-Patent-Class-62-45; US-Patent-Class-165-2; US-Patent-Class-165-109; US-Patent-Class-259-DIG.18) Avail: US Patent Office CSCL 14B

A fluid storage vessel for containing cryogenic fluids is described. The storage vessel contains an auxiliary chamber which is connected to the main container by a jet nozzle. The wall of the auxiliary vessel is heat cycled to produce a corresponding expansion and contraction of the fluid within the auxiliary chamber. This action causes heating and mixing of the stored fluid by means of jetting the expanded fluid to and from relative to the stored fluid contents of the vessel.
Official Gazette of the U.S. Patent Office



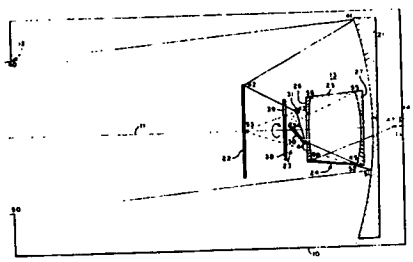
N74-15094* National Aeronautics and Space Administration. Pasadena Office, Calif.
TEMPERATURE COMPENSATED DIGITAL INERTIAL SENSOR Patent
Patrick J. Hand, (JPL) Issued 1 Jan. 1974 9 p Filed 9 Nov. 1972 Supersedes N73-13436 (11 - 04, p 0421) Sponsored by NASA
(NASA-Case-NPO-13044-1; US-Patent-3,782,205; US-Patent-Appl-SN-305012; US-Patent-Class-73-497; US-Patent-Class-73-517B; US-Patent-Class-74-5.6) Avail: US Patent Office CSCL 14B

A circuit which maintains the inertial element of a gyroscope or accelerometer at a constant position by delivering pulses to a rebalancing motor is discussed. The circuit compensates for temperature changes by using a temperature sensor that varies the threshold of inertial element movement required to generate a rebalance pulse which reacts to changes in viscosity of the flotation fluid. The output of the temperature sensor also varies the output level of the current source to compensate for changes in the strength of the magnets of the rebalancing motor. The sensor also provides a small signal to the rebalance motor to provide a temperature dependent compensation for fixed drift or fixed bias.
Official Gazette of the U.S. Patent Office



N74-15095* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
OPTICAL INSTRUMENTS Patent
Irving Raymond Abel, inventor (to NASA) (Honeywell, Inc., Minneapolis) Issued 1 Jan. 1974 6 p Filed 10 Apr. 1972 Supersedes N73-22388 (11 - 13, p 1529) Sponsored by NASA
(NASA-Case-MSC-14096-1; US-Patent-3,782,835; US-Patent-Appl-SN-242662; US-Patent-Class-356-216; US-Patent-Class-356-43; US-Patent-Class-350-7; US-Patent-Class-350-285; US-Patent-Class-350-236) Avail: US Patent Office CSCL 20F

A wide angle, low focal ratio, high resolution, catoptric, image plane scanner is described. The scanner includes the following features: (1) a reflective improvement on the Schmidt principle, (2) a polar line scanner in which all field elements are brought to and corrected on axis, and (3) a scanner arrangement in which the aperture stop of the system is imaged at the center of curvature of a spherical primary mirror. The system scans are a large radial angle and an extremely high rate of speed with relatively small scanning mirrors. Because the system is symmetrical about the optical axis, the obscuration is independent of the scan angle. Official Gazette of the U.S. Patent Office

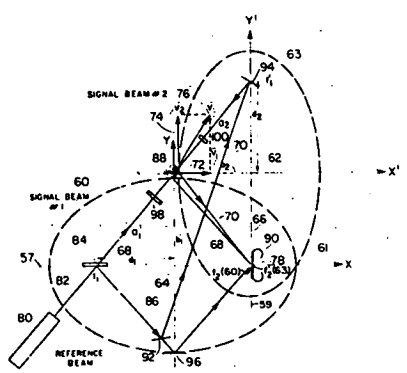


N74-17153* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

REAL TIME MOVING SCENE HOLOGRAPHIC CAMERA SYSTEM Patent

Robert L. Kurtz, inventor (to NASA) Issued 14 Aug. 1973 11 p Filed 2 Jun. 1971
(NASA-Case-MFS-21087-1; US-Patent-3,752,556;
US-Patent-Appl-SN-149283; US-Patent-Class-350-3.5) Avail: US Patent Office CSCL 14B

A holographic motion picture camera system producing resolution of front surface detail is described. The system utilizes a beam of coherent light and means for dividing the beam into a reference beam for direct transmission to a conventional movie camera and two reflection signal beams for transmission to the movie camera by reflection from the front side of a moving scene. The system is arranged so that critical parts of the system are positioned on the foci of a pair of interrelated, mathematically derived ellipses. The camera has the theoretical capability of producing motion picture holograms of projectiles moving at speeds as high as 900,000 cm/sec (about 21,450 mph). Official Gazette of the U.S. Patent Office

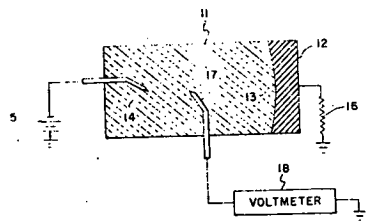


N74-18088* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

HIGH FIELD CdS DETECTOR FOR INFRARED RADIATION Patent

Ramesh C. Tyagi (NAS-NRC), James B. Robertson, Karl W. Boer (Univ. of Delaware), and Henry C. Hadley, Jr., inventors (to NASA) (Univ. of Delaware) Issued 5 Feb. 1974 4 p Filed 26 Jul. 1972 Supersedes N72-28463 (10 - 19, p 2564)
(NASA-Case-LAR-11027-1; US-Patent-3,790,795;
US-Patent-Appl-SN-275118; US-Patent-Class-250-338;
US-Patent-Class-250-370; US-Patent-Class-250-371) Avail: US Patent Office CSCL 14B

An infrared radiation detector including a cadmium sulfide platelet having a cathode formed on one of its ends and an anode formed on its other end is presented. The platelet is suitably doped such that stationary high-field domains are formed adjacent the cathode when based in the negative differential conductivity region. A negative potential is applied to the cathode such that a high-field domain is formed adjacent to the cathode. A potential measuring probe is located between the cathode and the anode at the edge of the high-field domain and means are provided for measuring the potential at the probe whereby this measurement is indicative of the infrared radiation striking the platelet. Official Gazette of the U.S. Patent Office

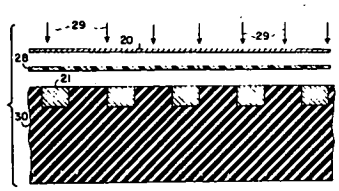


N74-18089* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

METHOD OF FABRICATING AN ARTICLE WITH CAVITIES Patent

Walter J. Dale and George M. Jurscaga, inventors (to NASA) Issued 19 Feb. 1974 5 p Filed 8 Feb. 1972 Supersedes N72-20396 (10 - 11, p 1473)
(NASA-Case-LAR-10318-1; US-Patent-3,793,109;
US-Patent-Appl-SN-224489; US-Patent-Class-156-245;
US-Patent-Class-156-285; US-Patent-Class-156-309;
US-Patent-Class-156-247) Avail: US Patent Office CSCL 14B

An article having a cavity with a thin bottom wall is provided by assembling a thin sheet, for example, a metal sheet, adjacent to the surface of a member having one or more apertures. A bonding adhesive is interposed between the thin sheet and the subadjacent member, and the thin sheet is subjected to a high fluid pressure. In order to prevent the differential pressure from being exerted against the thin sheet, the aperture is filled with a plug of solid material having a linear coefficient of thermal expansion higher than that of the member. When the assembly is subjected to pressure, the material is heated to a temperature such that its expansion exerts a pressure against the thin sheet thus reducing the differential pressure.
Official Gazette of the U.S. Patent Office



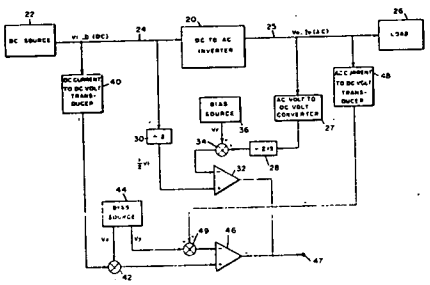
N74-18090* National Aeronautics and Space Administration. Pasadena Office, Calif.

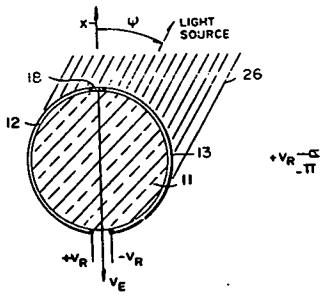
INVERTER RATIO FAILURE DETECTOR Patent

Albert P. Wagner (GE, Philadelphia), Theodore J. Ebersole (GE, Philadelphia), and Robert E. Andrews, inventors (to NASA) (GE, Philadelphia) Issued 5 Mar. 1974 10 p Filed 10 May 1973 Supersedes N73-23525 (11 - 14, p 1667) Sponsored by NASA

(NASA-Case-NPO-13160-1; US-Patent-3,795,858; US-Patent-Appl-SN-359157; US-Patent-Class-324-57R; US-Patent-Class-321-8R) Avail: US Patent Office CSCL 14B

A failure detector which detects the failure of a dc to ac inverter is disclosed. The inverter under failureless conditions is characterized by a known linear relationship of its input and output voltages and by a known linear relationship of its input and output currents. The detector includes circuitry which is responsive to the detector's input and output voltages and which provides a failure-indicating signal only when the monitored output voltage is less by a selected factor, than the expected output voltage for the monitored input voltage, based on the known voltages' relationship. Similarly, the detector includes circuitry which is responsive to the input and output currents and provides a failure-indicating signal only when the input current exceeds by a selected factor the expected input current for the monitored output current based on the known currents' relationship. Official Gazette of the U.S. Patent Office





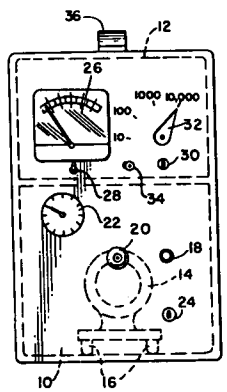
N74-18098*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

ELECTROSTATIC ENTRAINED MATERIAL MEASUREMENT SYSTEM Patent Application

James E. Johnston, inventor (to NASA) Filed 12 Mar. 1974 12 p

(NASA-Case-MFS-22128-2; US-Patent-Appl-SN-450536) Avail: NTIS HC $4.00 CSCL 14B

A device to measure the quantity of particulate material in air is described, comprising a tube and a vacuum source. The use of an electrostatic sensor in proximity to the tube provides a direct indication of the level of particulate matter. The device is uncomplicated and economical. NASA



N74-18093*# National Aeronautics and Space Administration. Pasadena Office, Calif.

WIDE ANGLE SUN SENSOR Patent Application

Larry L. Schumacher, inventor (to NASA) (JPL) Filed 28 Dec. 1973 18 p

(Contract NAS7-100)

(NASA-Case-NPO-13327-1; US-Patent-Appl-SN-429437) Avail: NTIS HC $4.00 CSCL 14B

A single-axis sun sensor consists of a cylinder of an insulating material on which at least one pair of detectors is deposited on the cylinder circumference. At any time, only one-half of the cylinder is illuminated so that the total resistance of the two detectors is a constant. Due to the round surface on which the detectors are deposited, the sensor exhibits a linear wide angle of + or - 50 deg to within an accuracy of about 2 percent. By depositing several pairs of detectors on adjacent circumferences, sufficient redundancy is realized to provide high reliability. A two-axis sensor is provided by depositing detectors on the surface of a sphere along at least two orthogonal great circles. NASA

N74-18099*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

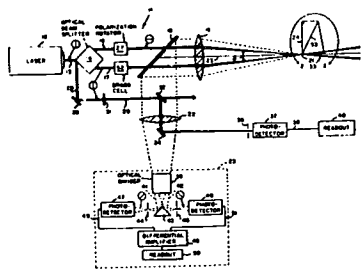
COMBINED DUAL SCATTER, LOCAL OSCILLATOR LASER DOPPLER VELOCIMETER Patent Application

Kenneth L. Orloff, inventor (to NASA) Filed 28 Mar. 1974 18 p

(NASA-Case-ARC-10642-1; US-Patent-Appl-SN-446562) Avail: NTIS HC $4.00 CSCL 14B

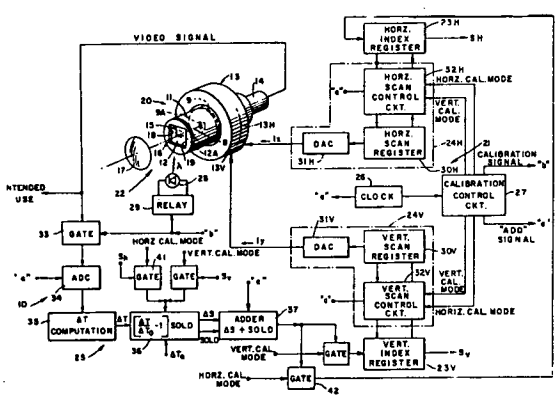
A laser Doppler velocimeter is described which is capable of effectively measuring two different velocity components of a fluid simultaneously. Such a velocimeter includes a pair of coherent beams of laser light which are focused to an intersection point through which flow particles within the fluid whose velocity is to be measured. Both beams are plane polarized with the plane of polarization of one being rotated normally with respect to the other, with the result that the scattered radiation is separable into two different beams respectively corresponding to the two incident beams. Such scattered radiation is Doppler shifted by

the moving particles and is collected for conventionally providing a measurement of the velocity of any particle flowing through the intersection point on a path which is generally transverse.
NASA



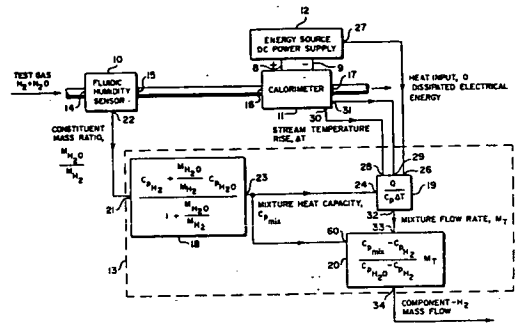
N74-18100*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
APPARATUS FOR CALIBRATING AN IMAGE DISSECTOR TUBE Patent Application
Edwin E. Klingman, III, inventor (to NASA) Filed 5 Mar. 1974 19 p
(NASA-Case-MFS-22208-1; US-Patent-Appl-SN-448325) Avail: NTIS HC $4.00 CSCL 14B

The photosensitive screen of an image dissector tube is illuminated with a light pattern, having parallel opposite edges. A sweep signal is applied to the deflection coils of the tube, causing pattern scanning in a line perpendicular to the edges and generation of an output video pulse. The sweep signal is in the form of a time variable current whose average rate of change during the scan of the line is a constant and is dependent on a settable control circuit. Measurement of the output pulse width permits the setting of the slope control circuit to be changed if the width differs from a standard associated with the tube.
NASA



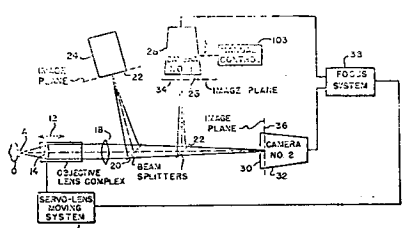
N74-18101*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
FLOW MEASURING APPARATUS Patent Application
Paul R. Prokopius, inventor (to NASA) Filed 28 Feb. 1974 19 p
(NASA-Case-LEW-12078-1; US-Patent-Appl-SN-447124) Avail: NTIS HC $4.00 CSCL 14B

An apparatus for measuring the mass flow rates of the components comprising a binary gas mixture is described. This is accomplished by directing a binary fluid or gas through a fluidic humidity sensor and then through a calorimeter which increases the temperature of the flowing binary gas. Electrical signals provided by the fluidic humidity sensor, the flow calorimeter and a power supply which energizes or heats the calorimeter are operated upon in a predetermined manner to provide an output signal indicative of the mass flow rate of one of the binary gases, thus allowing the mass flow rate of the other gas to be determined since the total mass flow rate is previously calculated by the instrument and is the output of the operating module.
NASA



N74-19093*# National Aeronautics and Space Administration. Pasadena Office, Calif.
SERVO-CONTROLLED INTRAVITAL MICROSCOPE SYSTEM Patent Application
Momtaz M. Mansour (JPL), Harold J. Wayland (JPL), and Carl P. Chapman, inventors (to NASA) (JPL) Filed 4 Sep. 1973 29 p
(Contract NAS7-100)
(NASA-Case-NPO-13214-1; NASA-Case-NPO-13215-1; US-Patent-Appl-SN-394149) Avail: NTIS HC $4.50 CSCL 14B

A microscope viewing system is provided which can maintain an in-focus enlarged view of a moving living body area. The system includes a beam splitter assembly behind the objective lens for directing light onto a viewing device and onto the targets of two video cameras, one target is located slightly in front of the image plane while the other target is located behind the image plane. A separate focus sensing circuit connected to each video camera includes a band pass filter for passing only the frequency components in an optimum high frequency band of the video signal, a differentiator, a detector, and a lowpass filter for generating a dc signal whose magnitude represents the degree of focus of the corresponding camera. The low pass filters of the two circuits are connected to a difference amplifier which generates a signal that drives a servo that moves the objective lens towards and away from the object.
NASA

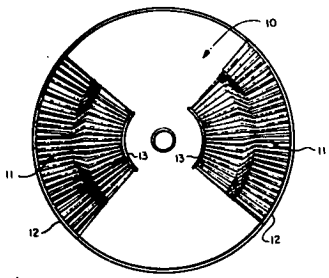


N74-20008* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
FORMATION OF STAR TRACKING RETICLES Patent
Wade O. Smith and Albert R. Toft, inventors (to NASA) Issued 26 Mar. 1974 6 p Filed 17 Apr. 1972 Supersedes N73-10460

(11 - 01, p 0056) Continuation-in-part of US Patent Appl. SN-80029, filed 12 Oct. 1970
(NASA-Case-GSC-11188-3; US-Patent-3,799,793; US-Patent-Appl-SN-244566; US-Patent-Class-117-45; US-Patent-Appl-SN-80029) Avail: US Patent Office CSCL 14B

The present application is directed towards a process for producing high resolution, substantially non-reflective reticles or choppers suitable for use for transmitting in both the visible and near ultra-violet regions, able to withstand reasonable handling and extreme environmental conditions, and capable of operating at speeds of from 2800 to about 9000 revolutions per minute without distortion. In particular, the present invention is directed towards the production or reticles having a quartz base vacuum coated with chromium, chromium-silver alloy, and silver with electrodeposited copper and black chromium thereon, respectively, in the form of a reticle pattern. The quartz permits the transmission of light while the pattern is opaque to light. The reticles of the present invention are intended for use in optical trackers, such as star trackers used in outer space.

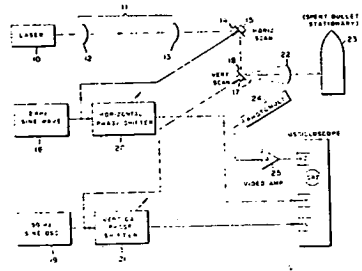
Official Gazette of the U.S. Patent Office



N74-20009* National Aeronautics and Space Administration. Pasadena Office, Calif.
APPARATUS FOR SCANNING THE SURFACE OF A CYLINDRICAL BODY Patent
Robert B. Nakich (JPL) and Raymond C. Woodbury, inventors (to NASA) (JPL) Issued 26 Mar. 1974 7 p Filed 28 Jun. 1972 Supersedes N72-28461 (10 - 19, p 2564) Sponsored by NASA
(NASA-Case-NPO-11861-1; US-Patent-3,800,074; US-Patent-Appl-SN-266911; US-Patent-Class-178-6; US-Patent-Class-178-DIG.1; US-Patent-Class-178-7.6) Avail: US Patent Office CSCL 14B

A laser scanning system for providing a two-dimensional display of a cylindrical surface, such as to display striae of a fired bullet is described. The cylinder is scanned along its axis by vibrating one mirror in the laser beam path, and is scanned in a direction normal to its axis by vibrating a second mirror in a direction normal to the first or by rotating the bullet. Scan control signals are adjusted in phase to produce a synchronized display of a video signal obtained from detection of scattered light from the surface thus scanned by a laser beam.

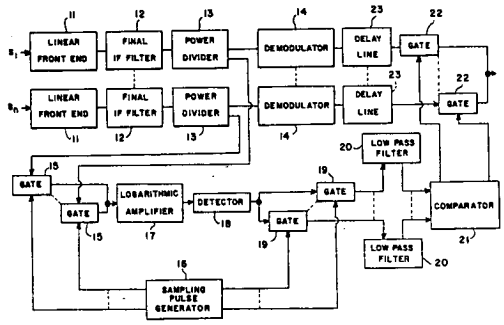
Official Gazette of the U.S. Patent Office



N74-20019*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
MULTICHANNEL LOGARITHMIC RF LEVEL DETECTOR Patent Application
Chase P. Hearn and Curtis L. Shriver, inventors (to NASA) Filed 21 Mar. 1974 11 p
(NASA-Case-LAR-11021-1; US-Patent-Appl-SN-453115) Avail: NTIS HC $4.00 CSCL 14B

A logarithmic radio frequency level detector which can be used to derive gain-weighting signals in an n-channel angle modulation diversity receiving system is discussed. The intermediate frequency signals in the n-channel receiving system are sequentially gated into a single logarithmic intermediate frequency amplifier which compresses the input signal dynamic range by a factor on the order of one hundred to one. The invention is applicable to any situation in which it is desired to measure the amplitudes of a number of radio frequency signals with low differential error.

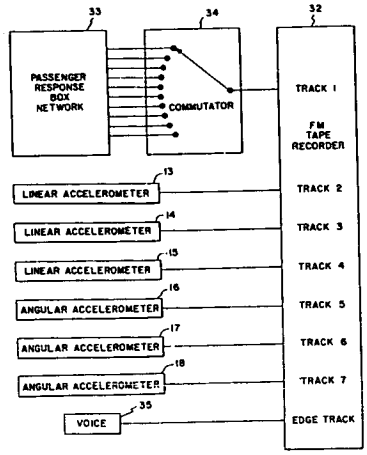
NASA



N74-20020*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
RECORDING APPARATUS Patent Application
Sherman A. Clevenson, Andrew C. Dibble, Thomas K. Lusby, Jr., David G. Stephens, and Harland F. Scholl, inventors (to NASA) Filed 27 Feb. 1974 10 p
(NASA-Case-LAR-11353-1; US-Patent-Appl-SN-446561) Avail: NTIS HC $4.00 CSCL 14B

An apparatus for obtaining data to be used in evaluating the passenger comfort or ride quality of a surface vehicle is described. Both the random vibration produced by the vehicle and the spontaneous subjective responses of several passengers to the vibration are simultaneously measured and recorded. Adjacent channels of a tape recorder are used to record the data received from accelerometer mounted on the vehicle.

NASA



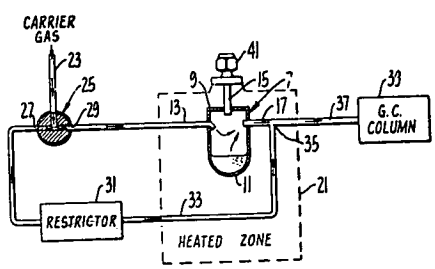
N74-20021*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

GAS CHROMATOGRAPH INJECTION SYSTEM Patent Application

Glenn E. Pollock, Milton E. Henderson, and Ralph W. Donaldson, Jr., inventors (to NASA) Filed 27 Feb. 1974 12 p

(NASA-Case-ARC-10344-2; US-Patent-Appl-SN-446564) Avail: NTIS HC $4.00 CSCL 14B

An injection system is provided for a gas chromatograph. The crux of the invention is the employment of a chamber which is cool and not under pressure. The sample is placed in the chamber and the solvent is removed by evaporation. The chamber is closed, then, by changing the position of the carrier gas control valve and heating the chamber, the sample is volatilized and swept by a carrier gas into the analysis apparatus. NASA



N74-20022*# National Aeronautics and Space Administration. Pasadena Office, Calif.

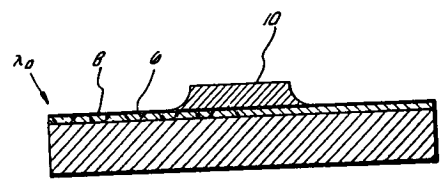
A DOPED JOSEPHSON TUNNELING JUNCTION FOR USE IN A SENSITIVE IR DETECTOR Patent Application

Melvin M. Saffren, inventor (to NASA) (JPL) Filed 19 Mar. 1974 26 p

(Contract NAS7-100)

(NASA-Case-NPO-13348-1; US-Patent-Appl-SN-452770) Avail: NTIS HC $4.50 CSCL 14B

A superconductive tunneling device with a modified tunnel barrier capable of supporting Josephson tunneling current is described. The device provides a particularly sensitive infrared detector of the Josephson junction type. The primary advantages of the invention are: (1) increased coupling of radiation to junctions, (2) making junctions more selective in their response to radiation, and (3) extending the response of the junctions to radiation of shorter wavelengths than can be found in a modified transfer Hamiltonian model. NASA



N74-21014* National Aeronautics and Space Administration, Washington, D.C.

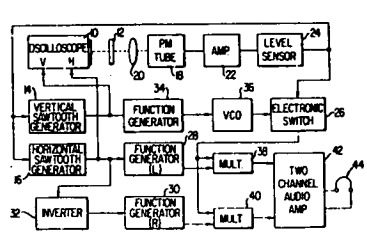
AUDITORY DISPLAY FOR THE BLIND Patent

Raymond M. Fish, inventor (to NASA) Issued 26 Mar. 1974 6 p Filed 27 Oct. 1972 Supersedes N73-12456 (11 - 03, p 0301)

(NASA-Case-HQN-10832-1; US-Patent-3,800,082; US-Patent-Appl-SN-301417; US-Patent-Class-178-7.2; US-Patent-Class-35-35A; US-Patent-Class-178-5.8R; US-Patent-Class-178-DIG.32; US-Patent-Class-340-407) Avail: US Patent Office CSCL 14B

A system for providing an auditory display of two-dimensional patterns as an aid to the blind is described. It includes a scanning device for producing first and second voltages respectively indicative of the vertical and horizontal positions of the scan and a further voltage indicative of the intensity at each point of the scan and hence of the presence or absence of the pattern at that point. The voltage related to scan intensity controls transmission of the sounds to the subject so that the subject knows that a portion of the pattern is being encountered by the scan when a tone is heard, the subject determining the position of this portion of the pattern in space by the frequency and interaural difference information contained in the tone.

Official Gazette of the U.S. Patent Office



N74-21015* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

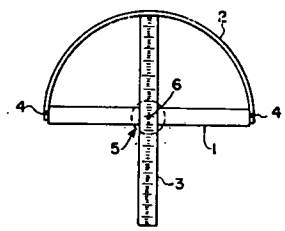
ORBITAL AND ENTRY TRACKING ACCESSORY FOR GLOBES Patent

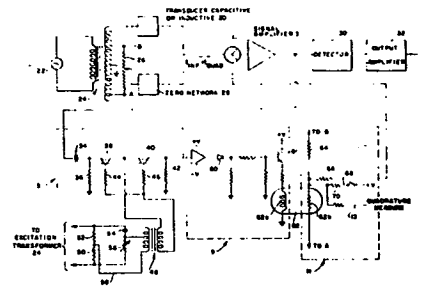
Edgar B. Pritchard, inventor (to NASA) Issued 26 Mar. 1974 5 p Filed 29 Nov. 1971 Supersedes N72-21416 (10 - 12, p 1608)

(NASA-Case-LAR-10626-1; US-Patent-3,798,778; US-Patent-Appl-SN-202750; US-Patent-Class-33-1SA; US-Patent-Class-33-46R) Avail: US Patent Office CSCL 14B

An orbital and entry tracking accessory or attachment is described which can be mounted on a globe to provide a rapid means of determining range requirements for entry vehicles returning from any orbit to any desired landing site with reasonable accuracy. The device is constructed of clear plastic strip material, and comprises a support ring, a calibrated orbital track member rigidly carried by the support ring, and a calibrated lateral range member pivotally coupled to the support ring at points such that the lateral range member is always oriented normally to the orbital track member. The assembly is mountable on the globe relatively snugly, but freely movable. At least one of the members has a detachable coupling which permits placement of the device on the globe.

Official Gazette of the U.S. Patent Office





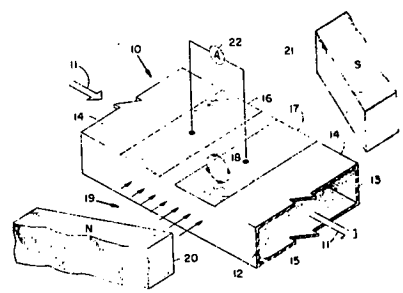
N74-21018* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

ELECTROMAGNETIC FLOW RATE METER Patent

Bruce A. Banks, inventor (to NASA) Issued 9 Apr. 1974 4 p Filed 30 Dec. 1971 Supersedes N72-20406 (10 - 11, p 1474)

(NASA-Case-LEW-10981-1; US-Patent-3,802,262; US-Patent-Appl-SN-214089; US-Patent-Class-73-194EM; US-Patent-Class-310-11; US-Patent-Class-324-34FL) Avail: US Patent Office CSCL 14B

A liquid metal, whose flow rate is to be determined, is directed through a chamber made of electrically-insulating material on which there is impressed a magnetic field perpendicular to the direction of flow of the liquid metal. The magnetic field is made to increase in strength in a downstream direction of the flow of liquid metal. At least a pair of electrodes are disposed in the chamber transversely and perpendicular to the direction of flow and an ammeter is connected between the electrodes. Electrodes may be disposed in the top or the bottom of the chamber and each may be segmented. Oppositely disposed electrodes may be used with at least one dividing wall extending from each electrode to cause reversal of the direction of flow of the liquid metal. The magnetic field may be provided by electromagnets or permanent magnets such as shaded pole permanent magnets. Official Gazette of the U.S. Patent Office



N74-21017* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

AUTOMATIC QUADRATURE CONTROL AND MEASURING SYSTEM Patent

John F. Hamlet, inventor (to NASA) Issued 23 Apr. 1974 6 p Filed 29 Nov. 1972 Supersedes N73-13434 (11 - 04, p 0421)

(NASA-Case-MFS-21660-1; US-Patent-3,806,802; US-Patent-Appl-SN-310616; US-Patent-Class-324-83Q) Avail: US Patent Office CSCL 14B

A quadrature component cancellation and measuring system comprising a detection system for detecting the quadrature component from a primary signal, including reference circuitry to define the phase of the quadrature component for detection is described. A Raysistor optical coupling control device connects an output from the detection system to a circuit driven by a signal based upon the primary signal. Combining circuitry connects the primary signal and the circuit controlled by the Raysistor device to subtract quadrature components. A known current through the optically sensitive element produces a signal defining the magnitude of the quadrature component.

Official Gazette of the U.S. Patent Office

N74-21019* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

METHOD AND APPARATUS FOR CHECKING FIRE DETECTORS Patent

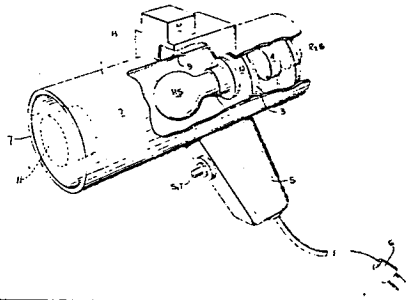
George T. Clawson, inventor (to NASA) Issued 9 Apr. 1974 6 p Filed 26 Dec. 1972 Supersedes N73-18436 (11 - 09, p 1034)

(NASA-Case-GSC-11600-1; US-Patent-3,802,249; US-Patent-Appl-SN-318357; US-Patent-Class-73-1F) Avail: US Patent Office CSCL 14B

A fire detector checking method and device are disclosed for nondestructively verifying the operation of installed fire detectors of the type which operate on the principle of detecting

the rate of temperature rise of the ambient air to sound an alarm and/or which sound an alarm when the temperature of the ambient air reaches a preset level. The fire alarm checker uses the principle of effecting a controlled simulated alarm condition to ascertain wheather or not the detector will respond. The checker comprises a hand-held instrument employing a controlled heat source, e.g., an electric lamp having a variable input, for heating at a controlled rate an enclosed mass of air in a first compartment, which air mass is then disposed about the fire detector to be checked. A second compartment of the device houses an electronic circuit to sense and adjust the temperature level and heating rate of the heat source.

Official Gazette of the U.S. Patent Office



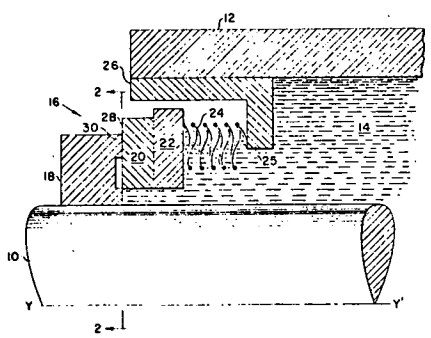
15 MACHINE ELEMENTS AND PROCESSES

Includes bearings, seals, pumps, and other mechanical equipment; lubrication, friction, and wear; manufacturing processes and quality control, and reliability; drafting; and materials fabrication, handling, and inspection.

N74-10474* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
SPIRAL GROOVE SEAL Patent
Lawrence P. Ludwig, inventor (to NASA) Issued 23 Oct. 1973 4 p Filed 21 Dec. 1970
(NASA-Case-LEW-10326-3; US-Patent-3,767,212; US-Patent-Appl-SN-99901; US-Patent-Class-277-25; US-Patent-Class-277-27; US-Patent-Class-277-96) Avail: US Patent Office CSCL 13E

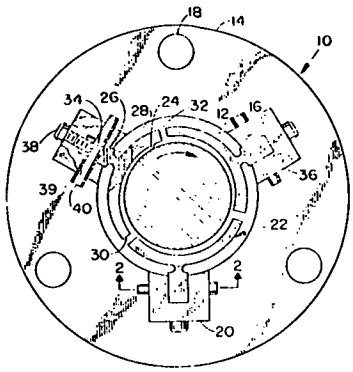
Mating flat surfaces inhibit leakage of a fluid around a stationary shaft. A spiral groove pattern produces a pumping action toward the fluid when the shaft rotates which prevents leakage while a generated hydraulic lifting force separates the mating surfaces to minimize wear.

Official Gazette of the U.S. Patent Office



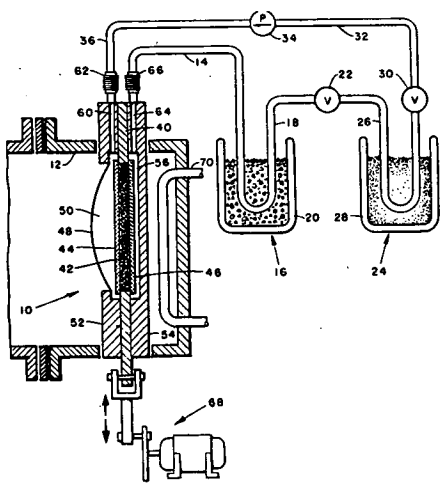
N74-10475*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
JOURNAL BEARINGS Patent Application
Fredrick T. Schuller and Warren A. Moore, inventors (to NASA) Filed 11 Oct. 1973 12 p
(NASA-Case-LEW-11076-3; US-Patent-Appl-SN-405346) Avail: NTIS HC $3.00 CSCL 13I

The instability of zero or lightly loaded shafts when they rotate at high speeds in bearings in low viscosity lubricants is considered . This instability refers to a selfexcited fractional frequency whirl or tendency of the shaft center to orbit the bearing center at an angular velocity about half that of the shaft around its own center. These problems have been overcome by utilizing bearings of fixed geometry that use a plurality of sectors to provide lobed areas which function as a pump when the rotor turns. The resulting pressure distribution is similar to that obtained in a hydrostatic gas bearing. NASA



N74-10476*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
APPARATUS FOR PRODUCING HIGH PURITY I-123 Patent Application
James W. Blue, inventor (to NASA) Filed 4 Sep. 1973 13 p
(NASA-Case-LEW-10518-3; US-Patent-Appl-SN-394207) Avail: NTIS . HC $3.00 CSCL 13I

A method is reported for producing high purity radioiodine for thyroid measurement and for use as a general radionuclide. The method involves the bombardment of tellurim power in targets with a cyclotron beam to produce Xe-123. Flowing gas streams carry the Xe-123 through one cold trap which removes contaminants to another cold trap which removes Xe-123 that subsequently decays to 1-123. During this bombardment energy is deposited in the target material causing its temperature to rise. Some of the tellurium vaporizes and subsequently condenses on surfaces that are cooler than the vaporization temperature. Provision is made for the repeated bombardment of this condensed tellurium. NASA

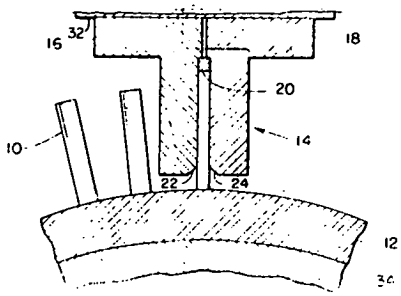


N74-11300* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
APPARATUS FOR WELDING BLADES TO ROTORS Patent
Kenneth H. Holko and Thomas J. Moore, inventors (to NASA) Issued 6 Nov. 1973 5 p Filed 24 Apr. 1972 Supersedes N72-25479 (10 - 16, p 2162)

(NASA-Case-LEW-10633-2; US-Patent-3,770,933; US-Patent-Appl-SN-247055; US-Patent-Class-219-107; US-Patent-Class-219-101; US-Patent-Class-219-78; US-Patent-Class-29-497.5) Avail: US Patent Office CSCL 13H

Using magnetic force upset welding to form T-joints between dissimilar thickness parts. This type of resistance welding is used to join compressor and turbine parts thereby reducing the weight and cost of a jet engine.

Official Gazette of the U.S. Patent Office



N74-11301* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

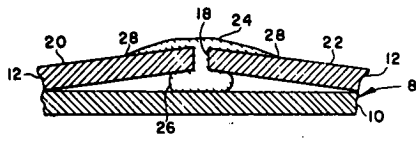
METHOD OF MAKING PRESSURE TIGHT SEAL FOR SUPER ALLOY Patent

Robert E. Little, Inventor (to NASA) Issued 6 Nov. 1973 5 p Filed 12 Jan. 1972 Supersedes N72-21471 (10 - 12, p 1616)

(NASA-Case-LAR-10170-1; US-Patent-3,769,689; US-Patent-Appl-SN-217213; US-Patent-Class-29-498; US-Patent-Class-29-460; US-Patent-Class-29-503; US-Patent-Class-29-527.2; US-Patent-Class-117-105.2) Avail: US Patent Office CSCL 11A

A procedure for forming a pressure tight seal along two edges of super alloy sheets is presented. The procedure consists of flame spraying a powdered aluminum-nickel composition on the joint. The use of frozen carbon dioxide and carbon dioxide gas to maintain a low temperature environment during the flame spraying is described.

P.N.F.



N74-13177* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

MOLDING PROCESS FOR IMIDAZOPYRROLONE POLYMERS Patent

Charles L. Johnson, inventor (to NASA) Issued 13 Nov. 1973 2 p Filed 29 Oct. 1971 Supersedes N72-22505 (10 - 13, p p 1576)

(NASA-Case-LAR-10547-1; US-Patent-3,772,418; US-Patent-Appl-SN-193980; US-Patent-Class-264-294) Avail: US Patent Office CSCL 13H

A process is described for producing shaped articles of imidazopyrrolone polymers comprising molding imidazopyrrolone polymer molding power under pressure and at a temperature greater than 475 C. Moderate pressures may be employed. Preferably, prior to molding, a preform is prepared by isostatic compression. The preform may be molded at a relatively low initial pressure and temperature; as the temperature is increased to a value greater than 475 C., the pressure is also increased.

Official Gazette of the U.S. Patent Office

N74-13178* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

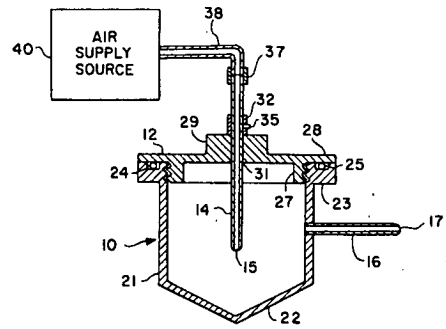
LYOPHILIZED SPORE DISPENSER Patent

Artie D. Jessup, inventor (to NASA) Issued 4 Dec. 1973 4 p Filed 13 Oct. 1971 Supersedes N72-21477 (10 - 12, p p 1617)

(NASA-Case-LAR-10544-1; US-Patent-3,776,432; US-Patent-Appl-SN-188928; US-Patent-Class-222-193) Avail: US Patent Office CSCL 13I

A lyophilized spore dispenser is provided which produces a finely divided, monoparticulate cloud of bacterial spores. The spores are contained within a tightly sealed chamber, and a turbulator orifice connected to an air supply source provides a jet of air which stirs up the spores and causes the spores to be suspended in eddy currents within the chamber. This air jet also produces a positive pressure within the chamber which forces the spores out of an injection orifice.

Official Gazette of the U.S. Patent Office



N74-13179* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

METHOD OF FORMING ARTICLES OF MANUFACTURE FROM SUPERALLOY POWDERS Patent

John C. Freche, William J. Waters, and Richard L. Ashbrook, inventors (to NASA) Issued 27 Nov. 1973 3 p Filed 10 Mar. 1972 Supersedes N72-21485 (10 - 12, p 1618) Continuation-in-part of US Patent Appl. SN-29917 filed 20 Apr. 1970

(NASA-Case-LEW-10805-2; US-Patent-3,775,101; US-Patent-Appl-SN-233743; US-Patent-Class-75-213; US-Patent-Class-29-182; US-Patent-Class-29-420.5; US-Patent-Class-75-200; US-Patent-Class-75-214; US-Patent-Class-75-226; US-Patent-Appl-SN-29917) Avail: US Patent Office CSCL 13H

A highly alloyed superalloy material is obtained using prealloyed powders. The material is easily shaped at high temperatures when it becomes superplastic because of its particular microstructure.

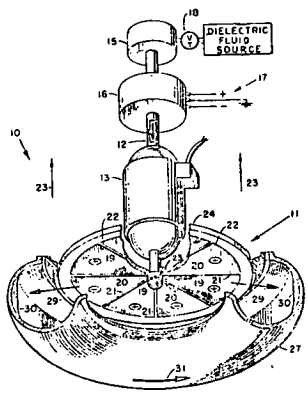
Official Gazette of the U. S. Patent Office

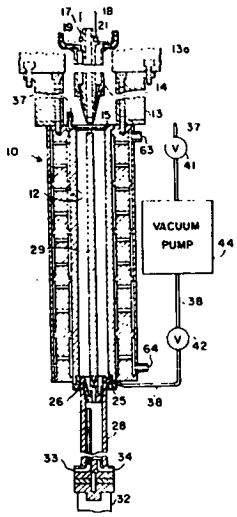
N74-13199*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

FINE PARTICULATE CAPTURE DEVICE Patent Application

Victor S. Peterson and Robert D. Siewert, inventors (to NASA) Filed 8 Nov. 1973 8 p
(NASA-Case-LEW-11583-1; US-Patent-Appl-SN-414042) Avail: NTIS HC $3.00 CSCL 13B

To capture fine particulate matter in a gas such as air, a dielectric fluid is directed to the center of whichever face of a rotating disc is exposed to the air flow. The disc is comprised of two or more segments which bear opposite electrostatic potentials. As the dielectric fluid is centrifuged towards the periphery of the rotating disc, the fluid becomes charged to the same potential as the segment over which it is passing. Particulate matter is attracted to the charged segment and is captured by the fluid. The fluid then carries the captured particulate matter to a collection device such as a toroidal container disposed around the periphery of the disc. A grounded electrically-conductive ring may be disposed at the outer periphery of the disc to neutralize the captured particles and the fluid before they enter the container. NASA



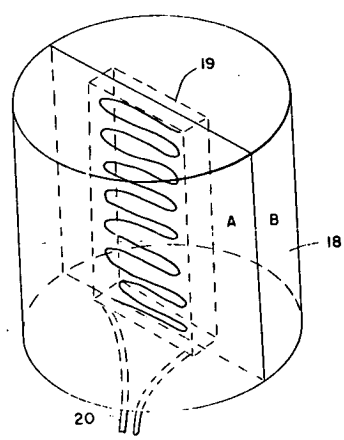


N74-14133* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
EVACUATED DISPLACEMENT COMPRESSION MOLDING
Patent
Wilbur C. Heier, inventor (to NASA) Issued 18 Dec. 1973 8 p Filed 11 Nov. 1971 Supersedes N72-21487 (10 - 12, p 1618)
(NASA-Case-LAR-10782-1; US-Patent-3,780,151; US-Patent-Appl-SN-197689; US-Patent-Class-264-102) Avail: US Patent Office CSCL 13H

A process for molding long, thin-wall tubular bodies from thermosetting plastic molding compounds is described. The tubular bodies produced may have body lengths several times the diameters. The application of the process for manufacturing rocket engine cases and nozzles is discussed. The advantages of the system over other methods of circular tube manufacture are analyzed. P.N.F.

N74-14141*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
IMPROVED BONDING METHOD IN THE MANUFACTURE OF CONTINUOUS REGRESSION RATE SENSOR DEVICES
Patent Application
William M. Haraway, Jr., Walter J. Dale, and Edwin A. McErlean, inventors (to NASA) Filed 12 Dec. 1973 17 p
(NASA-Case-LAR-10337-1; US-Patent-Appl-SN-424038) Avail: NTIS HC $3.00 CSCL 13H

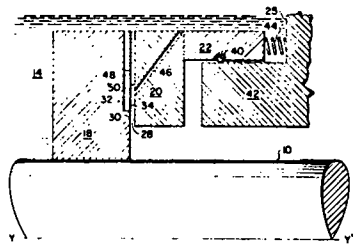
A bonding technique in the manufacture of continuous regression rate sensor devices is described. The process involves the use of phenolic resins as bonding agents that are manufactured from phenolic-graphite or phenolic-nylon materials. The application of the process to the manufacture of materials for nose cones and structural members of space missiles is discussed. NASA



N74-15125* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
SPIRAL GROOVE SEAL Patent
Lawrence P. Ludwig and Thomas N. Strom, Inventors (to NASA) Issued 1 Jan. 1974 6 p Filed 24 Jan. 1972 Supersedes N72-27522 (10-18, p 2439) Continutation-in-part of US Patent Appl. SN-54540, filed 13 Jul. 1970, which is a continuation-in-part of abandoned US Patent Appl. SN-723465, filed 23 Apr. 1968
(NASA-Case-XLE-10326-4; US-Patent-3,782,737; US-Patent-Appl-SN-220251; US-Patent-Class-277-27; US-Patent-Class-277-91; US-Patent-Appl-SN-54540; US-Patent-Appl-SN-723465) Avail: US Patent Office CSCL 11A

Mating flat surfaces inhibit leakage of a fluid around a stationary shaft. A spiral groove produces a pumping action toward the fluid when the shaft rotates. This prevents leakage while a generated hydraulic lifting force separates the mating surfaces to minimize wear. Provision is made for placing these spiral grooves in communication with the fluid to accelerate the generation of the hydraulic lifting force.

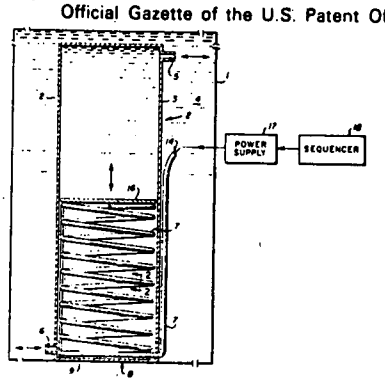
Official Gazette of the U.S. Patent Office



N74-15126* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
BIMETALLIC FLUID DISPLACEMENT APPARATUS Patent
Thomas N. Canning, inventor (to NASA) Issued 1 Jan. 1974 5 p Filed 11 Aug. 1972 Supersedes N73-30461 (11 - 21, p 2552)
(NASA-Case-ARC-10441-1; US-Patent-3,782,699; US-Patent-Appl-SN-280029; US-Patent-Class-259-98; US-Patent-Class-417-471; US-Patent-Class-417-470) Avail: US Patent Office CSCL 13K

Stirring and heating stored gases and liquids is accomplished by using the deformation of a bimetallic structure which deforms significantly when heated. The deformation is used to effect gradual or impulsive motion of a piston, vane, wire, or diaphram for displacement of the fluid. The heated bimetallic is also employed for heating the stored fluid.

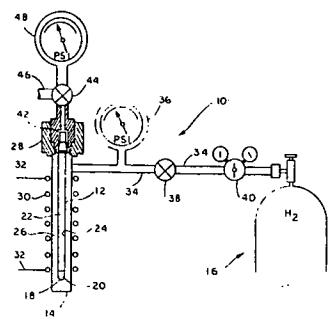
Official Gazette of the U.S. Patent Office



N74-15127* National Aeronautics and Space Administration. Pasadena Office, Calif.
COMPACT HYDROGENATOR Patent
Peter G. Simmonds, inventor (to NASA) (JPL) Issued 1 Jan. 1974 7 p Filed 7 Oct. 1971 Supersedes N72-21474(10 - 12, p 1617) Sponsored by NASA
(NASA-Case-NPO-11682-1; US-Patent-3,782,904; US-Patent-Appl-SN-187365; US-Patent-Class-23-284) Avail: US Patent Office CSCL 13I

The development and characteristics of a hydrogenating apparatus are described. The device consists of a reaction chamber which is selectively permeable to atomic hydrogen and catalytically active to a hydrogenating reaction. In one device, hydrogen is pumped out of the reaction chamber while the reactant remains inside to remove molecular hydrogen so that more atomic hydrogen can pass through the walls. In another device, the reactant is pumped through the reaction chamber, and the hydrogen is removed from the material leaving the chamber. The reactant is then cycled through the chamber.

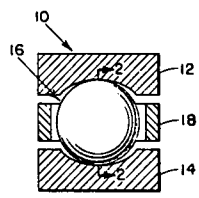
Official Gazette of the U.S. Patent Office



N74-15128* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
METHOD OF MAKING ROLLING ELEMENT BEARINGS Patent
Richard J. Parker, inventor (to NASA) Issued 1 Jan. 1974 4 p Filed 14 Aug. 1972 Supersedes N72-31491 (10 - 22, p 2971) Continuation-in-part of US Patent Appl. SN-201904, filed 24 Nov. 1971
(NASA-Case-LEW-11087-2; US-Patent-3,781,958; US-Patent-Appl-SN-280390; US-Patent-Class-29-148.4A; US-Patent-Class-29-148.4B; US-Patent-Appl-SN-201904) Avail: US Patent Office CSCL 13I

A method is described of making rolling elements by forming low mass cores having either hollow centers or being of a low mass material. The low mass cores are plated and heat treated to provide hard surfaces on the rolling elements. After grinding to the proper diameter the rolling elements are assembled between races to form a hearing.

Official Gazette of the U.S. Patent Office

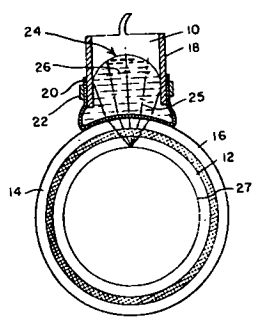


N74-15130* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

ULTRASONIC SCANNING SYSTEM FOR IN-PLACE INSPECTION OF BRAZED TUBE JOINTS Patent

Johnny L. Haynes, Charles G. Wages, and Hamilton S. Haralson, inventors (to NASA) Issued 11 Dec. 1973 6 p Filed 9 Nov. 1971 Supersedes N72-21482 (10 - 12, p 1618) (NASA-Case-MFS-20767-1; US-Patent-3,777,552; US-Patent-Appl-SN-196898; US-Patent-Class-73-67.8S) Avail: US Patent Office CSCL 14D

A miniaturized ultrasonic scanning system for nondestructive in-place, non-immersion testing of brazed joints in stainless-steel tubing is described. The system is capable of scanning brazed tube joints, with limited clearance access, in 1/4 through 5/8 inch union, tee, elbow and cross configurations. The system has the capability to detect defective conditions now associated with material density changes in addition to those which are depended upon density variations. The system includes a miniaturized scanning head assembly that fits around a tube joint and rotates the transducer around and down the joint in a continuous spiral motion. The C-scan recorder is similar in principle to conventional models except that it was specially designed to track the continuous spiral scan of the tube joint. The scanner and recorder can be operated with most commercially available ultrasonic flaw detectors. Official Gazette of the U.S. Patent Office

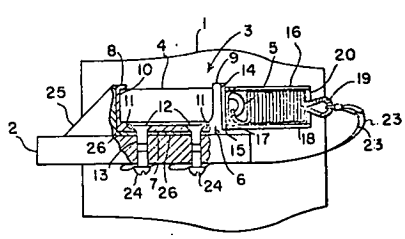


N74-16135* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

EJECTABLE UNDERWATER SOUND SOURCE RECOVERY ASSEMBLY Patent

Stephen C. Irick, inventor (to NASA) Issued 1 Jan. 1974 5 p Filed 19 Jul. 1972 Supersedes N72-31493 (10 - 22, p 2971) (NASA-Case-LAR-10595-1; US-Patent-3,783,443; US-Patent-Appl-SN-273240; US-Patent-Class-340-5R; US-Patent-Class-340-8R; US-Patent-Class-340-12R) Avail: US Patent Office CSCL 09E

An underwater sound source is described that may be ejectably mounted on any mobile device that travels over water, to facilitate in the location and recovery of the device when submerged. A length of flexible line maintains a connection between the mobile device and the sound source. During recovery, the sound source is located be particularly useful in the recovery of spent rocket motors that bury in the ocean floor upon impact. Official Gazette of the U.S. Patent Office

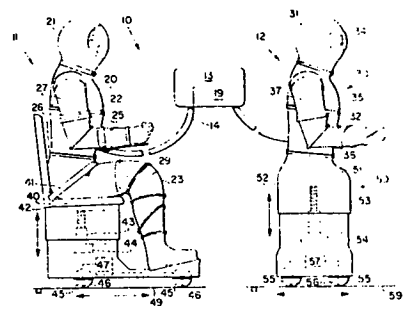


N74-16139*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

ANTHROPOMORPHIC MASTER/SLAVE MANIPULATOR SYSTEM Patent Application

Hubert C. Vykukal, Reginald F. King, and Wilbur C. Vallotton, inventors (to NASA) Filed 24 Jan. 1974 37 p (NASA-Case-ARC-10756-1; US-Patent-Appl-SN-436313) Avail: NTIS HC $4.00 CSCL 05H

An anthropomorphic master/slave manipulator system is described. The master arm apparatus includes: master tubular articulated portions which are coaxially adjacent to one another and relatively rotatable, and master transducing apparatus responsive to the relative rotation of the adjacent tubular portions and operative to provide a driving signal. A slave arm apparatus is provided with slave tubular portions corresponding to those portions of the master arm apparatus. NASA



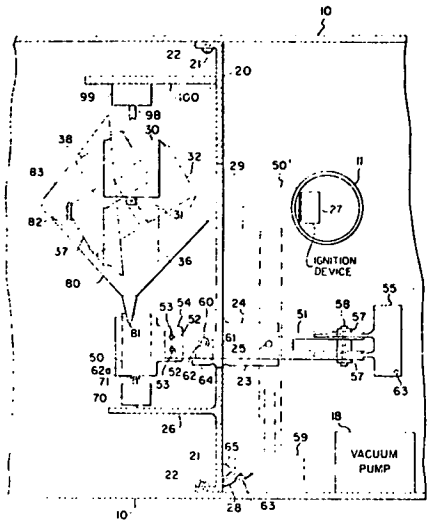
N74-18123* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

APPARATUS FOR REMOTE HANDLING OF MATERIALS Patent

Robert B. Kimball (N. Am. Rockwell Corp., Downey, Calif.), David T. Hodder (N. Am. Rockwell Corp., Downey, Calif.), and Walter W. Wrinkle, inventors (to NASA) (N. Am. Rockwell Corp., Downey, Calif.) Issued 5 Feb. 1974 9 p Filed 30 Dec. 1971 Supersedes N72-21476 (10 - 12, p 1617) Sponsored by NASA (NASA-Case-LAR-10634-1; US-Patent-3,790,347; US-Patent-Appl-SN-214084; US-Patent-Class-23-253PC; US-Patent-Class-23-259, US-Patent-Class-259-72; US-Patent-Class-312-209; US-Patent-Class-356-85; US-Patent-Class-356-197) Avail: US Patent Office CSCL 13I

Apparatus for remote handling of materials are described. A closed housing is provided with first and second containers and first and second reservoirs for holding materials to be mixed. The materials are transferable from the reservoirs to the first container where they are mixed. The mixed materials are then conveyed from the first container to the second container preferably by dumping the mixed materials into a funnel positioned over the second container. The second container is then moved to a second position for analysis of the mixed materials. For example, the materials may be ignited and the flame analyzed. Access, such as a sight port, is provided in the housing at the analysis position. The device provides a simple and inexpensive apparatus for safely mixing a pyrophoric material and an oxidizer which together form a thermite type mixture that burns to produce a large quantity of heat and light.

Official Gazette of the U.S. Patent Office



N74-18124* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

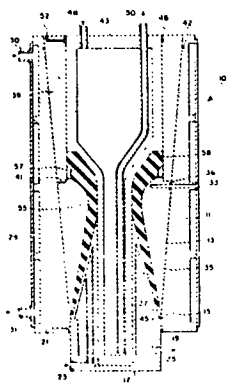
METHOD FOR COMPRESSION MOLDING OF THERMOSETTING PLASTICS UTILIZING A TEMPERATURE GRADIENT ACROSS THE PLASTIC TO CURE THE ARTICLE Patent

Wilbur C. Heier, inventor (to NASA) Issued 5 Feb. 1974 5 p Filed 15 Nov. 1971 Supersedes N72-21484 (10 - 12, p 1618)

(NASA-Case-LAR-10489-1; US-Patent-3,790,650; US-Patent-Appl-SN-198763; US-Patent-Class-264-102) Avail: US Patent Office CSCL 13H

A method is described for compression molding of thermosetting plastics composition. Heat is applied to the compressed load in a mold cavity and adjusted to hold molding temperature at the interface of the cavity surface and the compressed compound to produce a thermal front. This thermal front advances into the evacuated compound at mean right angles to the compression load and toward a thermal fence formed at the opposite surface of the compressed compound.

Official Gazette of the U.S. Patent Office



N74-18125* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

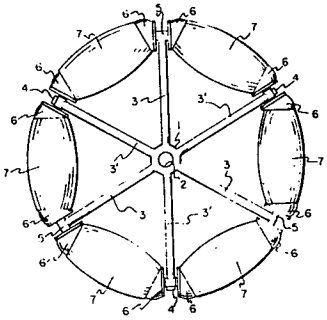
OMNIDIRECTIONAL WHEEL Patent

Josef F. Blumrich, inventor (to NASA) Issued 5 Feb. 1974 8 p Filed 17 Apr. 1972 Supersedes N72-25490 (10 - 16, p 2163)

(NASA-Case-MFS-21309-1; US-Patent-3,789,947; US-Patent-Appl-SN-244519; US-Patent-Class-180-79.3; US-Patent-Class-301-5P) Avail: US Patent Office CSCL 13I

The apparatus consists of a wheel having a hub with radially disposed spokes which are provided with a plurality of circumferential rim segments. These rim segments carry, between the spokes, rim elements which are rigid relative to their outer support surfaces, and defined in their outer contour to form a part of the circle forming the wheel diameter. The rim segments have provided for each of the rim elements an independent drive means selectively operable when the element is in ground contact to rotatably drive the rim element in a direction of movement perpendicularly lateral to the normal plane of rotation and movement of the wheel. This affords the wheel omnidirectional movement.

Official Gazette of the U.S. Patent Office



N74-18126* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

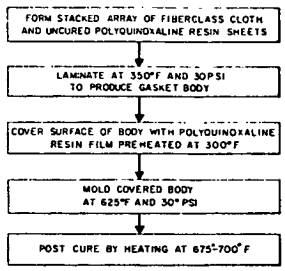
REINFORCED POLYQUINOXALINE GASKET AND METHOD OF PREPARING THE SAME Patent

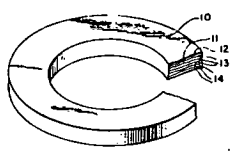
Richard VanAuken, inventor (to NASA) (Whittaker Corp., San Diego, Calif.) Issued 5 Feb. 1974 5 p Filed 30 Dec. 1971 Supersedes N72-20460 (10 - 11, p 1481) Sponsored by NASA

(NASA-Case-MFS-21364-1; US-Patent-3,790,432; US-Patent-Appl-SN-214006; US-Patent-Class-161-93; US-Patent-Class-156-331; US-Patent-Class-161-42; US-Patent-Class-161-43; US-Patent-Class-161-182; US-Patent-Class-161-192; US-Patent-Class-260-2R; US-Patent-Class-264-135; US-Patent-Class-264-136; US-Patent-Class-264-257) Avail: US Patent Office CSCL 13I

A gasket or seal resistant to ionizing radiation and liquid hydrogen temperatures is made up of a laminated polyquinoxaline resin-fiberglass cloth body portion and a molded polyquinoxaline encapsulating film. The laminated body is prepared by stacking thin sheets of the resin alternately with fiberglass cloth and heating the assembly under pressure with the temperature, pressure and resin film thickness being controlled so that only partial impregnation of the fiberglass cloth is produced. The encapsulating resin film is preheated at about 300 f and applied to the laminate body by molding at a temperature of about 625 F. The molded gasket is then deflashed and post-cured by heating at 675 to 700 F.

Official Gazette of the U.S. Patent Office





N74-18127* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

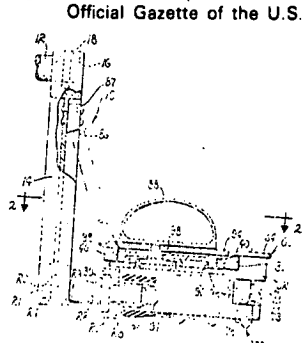
MANUAL ACTUATOR Patent

Raymond L. Gause and C. G. Glenn, inventors (to NASA) Issued 29 Jan. 1974 5 p Filed 27 Jun. 1972 Supersedes N73-15503 (11 - 06, p 0676)

(NASA-Case-MFS-21481-1; US-Patent-3,788,163; US-Patent-Appl-SN-266771; US-Patent-Class-74-594.6; US-Patent-Class-74-594.7; US-Patent-Class-128-25R; US-Patent-Class-272-73; US-Patent-Class-272-80) Avail: US Patent Office CSCL 13I

An actuator for an exercising machine employable by a crewman aboard a manned spacecraft is presented. The actuator is characterized by a force delivery arm projected from a rotary imput shaft of an exercising machine and having a force input handle extended orthogonally from its distal end. The handle includes a hand-grip configured to be received within the palm of the crewman's hand and a grid pivotally supported for angular displacement between a first position, wherein the grid is disposed in an overlying juxtaposition with the hand-grip, and a second position, angularly displaced from the first position, for affording access to the hand-grip, and a latching mechanism fixed to the sole of a shoe worn by the crewman for latching the shoe to the grid when the grid is in the first position.

Official Gazette of the U.S. Patent Office



N74-18128* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

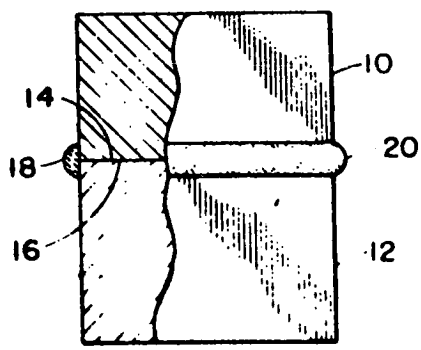
DIFFUSION WELDING IN AIR Patent

Thomas J. Moore and Kenneth H. Holko, inventors (to NASA) Issued 29 Jan. 1974 6 p Filed 24 Apr. 1972 Supersedes N72-25471 (10 - 16, p 2161)

(NASA-Case-LEW-11387-1; US-Patent-3,787,959; US-Patent-Appl-SN-247090; US-Patent-Class-29-482; US-Patent-Class-29-488; US-Patent-Class-29-497; US-Patent-Class-29-498) Avail: US Patent Office CSCL 13H

Solid state welding a butt joint by fusion welding the peripheral surfaces to form a seal is described along with, autogenetically cleaning the faying or mating surfaces of the joint by heating the abutting surfaces to 1,200 C and heating to the diffusion welding temperature in air.

Official Gazette of the U.S. Patent Office

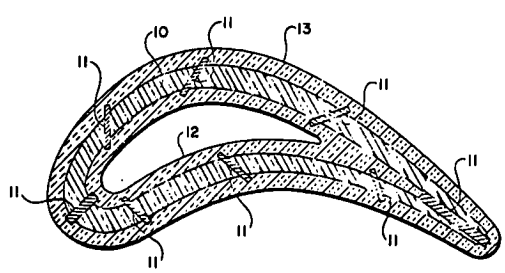


N74-18131*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

METHOD OF MAKING AN APERTURED CASTING Patent Application

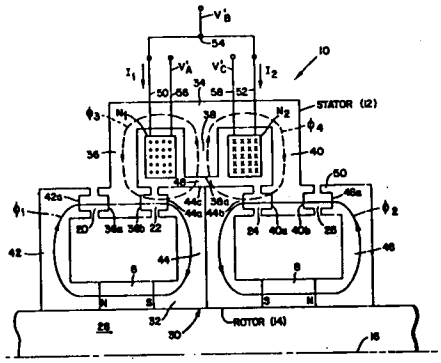
Andrew Terpay, inventor (to NASA) Filed 27 Feb. 1974 7 p (NASA-Case-LEW-11169-1; US-Patent-Appl-SN-446568) Avail: NTIS HC $4.00 CSCL 13/4

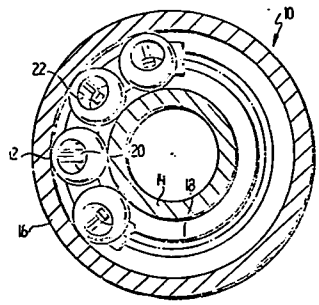
A method for producing an apertured casting is described. The casting is produced by forming a duplicate in the shape of the finished casting, positioning refractory metal wires to form apertures, and firing the ceramic duplicate in a furnace. The heat of the furnace removes the wires by sublimation and leaves the desired apertures in the casting. NASA



N74-18132*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
AXIALLY AND RADIALLY CONTROLLABLE MAGNETIC BEARING Patent Application
Leo J. Veillette, inventor (to NASA) Filed 8 Feb. 1974 24 p (NASA-Case-GSC-11551-1; US-Patent-Appl-SN-440917) Avail: NTIS HC $4.25 CSCL 13I

To overcome the problems of bearing friction in relatively large spinning structures, a pair of magnetic bearings were used to suspend or levitate the ends of the axis of a spinning rotor relative to a stator by magnetic forces or flux concentrated in relatively narrow air or vacuum gaps between the bearing rotor and stator. Permanent magnets carried by the rotor generate constant axial bias fluxes in each of the air gaps. A pair of coils, disposed to axially excite the air gaps with variable flux, are driven in a manner so that the sum of the total fluxes in each of the air gaps is varied to change the radial stiffness between the bearing rotor and stator. Axial force between the rotor and stator is produced by exciting the two coils to vary the difference of the total air gap fluxes. The pair of coils are driven in a bridge circuit by pulse width modulated signals. NASA



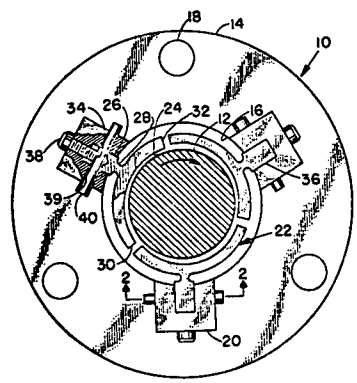


N74-18133*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
DRILLED BALL BEARING WITH A ONE PIECE ANTI-TIPPING CAGE ASSEMBLY Patent Application
Arthur S. Irwin, inventor (to NASA) (Marlin-Rockwell Corp.) Filed 12 Mar. 1974 9 p
(Contract NAS3-15343)
(NASA-Case-LEW-11925-1; US-Patent-Appl-SN-450505) Avail: NTIS HC $4.00 CSCL 13I

A drilled ball bearing with a pair of projections formed from the inner surface of each of the cage pockets is described. The projections prevent misorientation of the openings of the drilled passages of the balls with respect to the surfaces of the inner and outer races. The machining of the projections from the inner surface of each of the cage pockets forms a one piece structure. This structure has improved resistance to fragmentation caused by either thermal or vibrational effects when compared with conventional two piece anti-tipping cage assemblies. NASA

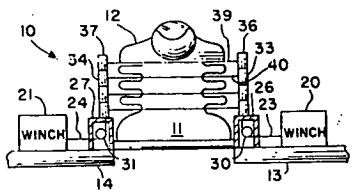
N74-18134*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
JOURNAL BEARINGS Patent Application
Fredrick T. Schuller and Warren A. Moore, inventors (to NASA) Filed 25 Feb. 1973 8 p
(NASA-Case-LEW-11076-4; US-Patent-Appl-SN-445178) Avail: NTIS HC $4.00 CSCL 13I

The characteristics of a bearing designed to reduce the instability of lightly loaded shafts rotating at high speeds are discussed. The bearing is of fixed geometry and uses several sectors to provide the lobed areas which function as a pump when the rotor turns. The resulting pressure distribution produces a hydrostatic effect which stabilizes the motion of the shaft. Drawings of the bearing are provided. NASA



N74-20063* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
REEFING SYSTEM Patent
Harry V. Fuller, inventor (to NASA) Issued 12 Mar. 1974 6 p Filed 29 Dec. 1972 Continuation-in-part of US Patent Appl. SN-99201, filed 17 Dec. 1970
(NASA-Case-LAR-10129-2; US-Patent-3,796,473; US-Patent-Appl-SN-319410; US-Patent-Class-312-1; US-Patent-Appl-SN-99201) Avail: US Patent Office CSCL 13E

A mechanical device for receiving a cable and controlling the motion of the cable is described. The cable moves freely in one direction and movement is resisted in the opposite direction until the forces exerted on the cable exceed a predetermined amount. Exceeding the minimum amount of force permits the cable to move in the opposite direction. Diagrams of the device are included. Official Gazette of the U.S. Patent Office

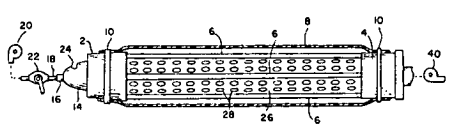


N74-20071*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
METHOD OF FLUXLESS BRAZING AND DIFFUSION BONDING OF ALUMINUM CONTAINING COMPONENTS Patent Application
Aleck P. Featherston (LTV Aerospace Corp.) and Kent P. OKelly, inventors (to NASA) (LTV Aerospace Corp.) Filed 12 Mar. 1974 24 p Sponsored by NASA
(NASA-Case-MSC-14435-1; US-Patent-Appl-SN-450504) Avail: NTIS HC $4.25 CSCL 13H

A method of diffusion bonding and fluxless brazing of aluminum alloys is described. An aluminum containing surface is treated to remove the aluminum oxide coating and the oxide free surface is then coated with a sealer containing polymeric material. The polymeric material prevents permeation of oxygen to the oxide-free surfaces. The polymeric substance is vaporized during the bonding process, leaving a clean surface for fluxless brazing. NASA

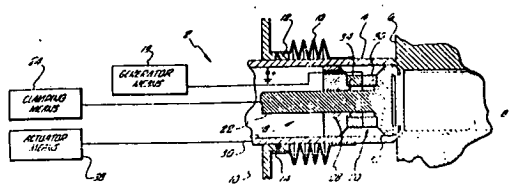
N74-20072*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
FIBER SEPARATING AND CLEANING METHOD AND APPARATUS Patent Application
Dan Padilla, inventor (to NASA) (Martin Marietta Corp.) Filed 12 Mar. 1974 8 p
(NASA-Case-LAR-11224-1; US-Patent-Appl-SN-450502) Avail: NTIS HC $4.00 CSCL 13H

A simple and inexpensive method and apparatus for separating, dispensing, and cleaning particulate material from individual fibers in fiber bundles is introduced. The apparatus, a perforated tube, is housed in a chamber in which a vacuum is drawn. An air jet is directed into one end of the tube and fiber bundles are fed into the jet which separates and pulls fibers into the tube. The tube retains the fibers while fiber fragments, undesirably short fibers, and particulate matter are drawn by the vacuum and resultant air flow out of the tube through its perforations to a suitable discharge. NASA



N74-20073*# National Aeronautics and Space Administration. Pasadena Office, Calif.
ULTRASONICALLY BONDED VALVE ASSEMBLY Patent Application
Richard J. Salvinski, inventor (to NASA) (TRW, Inc.) Filed 28 Sep. 1973 17 p Prepared for JPL
(Contracts NAS7-100; JPL-953029)
(NASA-Case-NPO-13360-1; US-Patent-APPL-SN-401920)
Avail: NTIS HC $4.00 CSCL 13G

A valve apparatus which is bonded or welded to the seat and then released by the application of the same energy to the bond joint is described. The valve is capable of maintaining a fluid tight seal over a long period of time. The choice of materials for the valve member and the valve seat provides an adequate sealing bond with little adhesion of material when the bond joint is broken for opening the valve. The configuration of the valve and the materials used in the development are described. NASA

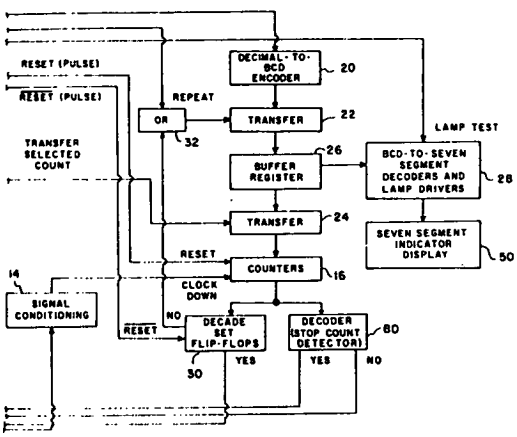


N74-21055* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
DIFFUSION WELDING Patent
Kenneth H. Holko, inventors (to NASA) Issued 26 Mar. 1974 4 p Filed 29 Sep. 1972 Supersedes N73-10500 (11 - 01, p 0061) Continuation-in-part of US Patent Appl. SN-289033, filed 14 Sep. 1972
(NASA-Case-LEW-11388-2; US-Patent-3,798,748; US-Patent-Appl-SN-293726; US-Patent-Class-29-487; US-Patent-Class-29-494; US-Patent-Class-29-498; US-Patent-Class-29-504; US-Patent-Appl-SN-289033) Avail: US Patent Office CSCL 13H

Dispersion-strengthened nickel alloys are sanded on one side and chemically polished. This is followed by a single-step welding process wherein the polished surfaces are forced into intimate contact at 1,400 F for one hour in a vacuum. Diffusion, recrystallization, and grain growth across the original weld interface are obtained during postheating at 2,150 F for two hours in hydrogen. Official Gazette of the U.S. Patent Office

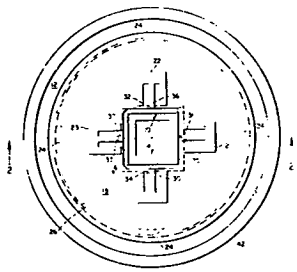
N74-21056* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
DIGITAL CONTROLLER FOR A BAUM FOLDING MACHINE Patent
Wayne H. Bryant, inventors (to NASA) Issued 26 Mar. 1974 15 p Filed 1 Sep. 1972 Supersedes N73-11442 (11 - 02, p 0178)
(NASA-Case-LAR-10688-1; US-Patent-3,800,253; US-Patent-Appl-SN-285705; US-Patent-Class-235-151; US-Patent-Class-235-92SB; US-Patent-Class-235-92PE) Avail: US Patent Office CSCL 13I

A digital controller for controlling the operation of a folding machine enables automatic folding of a desired number of sheets responsive to entry of that number into a selector. The controller includes three decade counter stages for corresponding rows of units, tens and hundreds push buttons. Each stage including a decimal-to-BCD encoder, a buffer register, and a digital or binary counter. The BCD representation of the selected count for each digit is loaded into the respective decade down counters. Pulses generated by a sensor and associated circuitry are used to decrease the count in the decade counters. When the content of the decade counter reaches either 0 or 1, a solenoid control valve is actuated which interrupts operation of the machine. A repeat switch, when actuated, prevents clearing of the buffer registers so that multiple groups of the same number of sheets can be folded without reentering the number into the selector.
Official Gazette of the U.S. Patent Office



substances have low pour points and a high degree of radiation resistance. Substitution of sulfur for the phenoxy group oxygen of either siloxane compounds has been found to result in a marked improvement in lubricity. The chemical formulas of the organic compounds are presented.

Official Gazette of the U.S. Patent Office



N74-21057* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

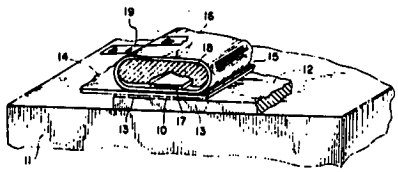
TOTALLY CONFINED EXPLOSIVE WELDING Patent

Laurence J. Bement, inventor (to NASA) Issued 19 Mar. 1974 5 p Filed 14 Sep. 1972 Supersedes N72-33478 (10 - 24, p 3225)

(NASA-Case-LAR-10941-1; US-Patent-3,797,098; US-Patent-Appl-SN-289048; US-Patent-Class-29-470.1) Avail: US Patent Office CSCL 13H

A method and associated apparatus for confining the undesirable by-products and limiting noise of explosive welding are discussed. The apparatus consists fo a simple enclosure into which the explosive is placed and within which the explosion occurs. The shape of the enclosure, the placement of the explosive, and the manner in which the enclosure is placed upon the material to be welded determine the force of the explosion transmitted to the proposed bond area. The explosion is totally confined within the enclosure thus reducing the noise level and preventing debris from being strewn about to contaminate the weld area or create personnel hazards.

Official Gazette of the U.S. Patent Office



N74-21058* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

THIOPHENYL ETHER DISILOXANES AND TRISILOXANES USEFUL AS LUBRICANT FLUIDS Patent

Norman Bilow (Hughes Aircraft Co., Los Angeles) and Richard I. Akawie, inventors (to NASA) (Hughes Aircraft Co., Los Angeles) Issued 2 Apr. 1974 3 p Filed 24 Jul. 1973 Supersedes N73-28532 (11 - 19, p 2304) Sponsored by NASA

(NASA-Case-MFS-22411-1; US-Patent-3,801,617; US-Patent-Appl-SN-382262; US-Patent-Class-260-448.2N) Avail: US Patent Office CSCL 11H

The characteristics of organosilicon compounds for lubrication under extreme conditions are discussed. The substances considered are thiophenyl ether disiloxanes and trisiloxanes. These

N74-21059* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

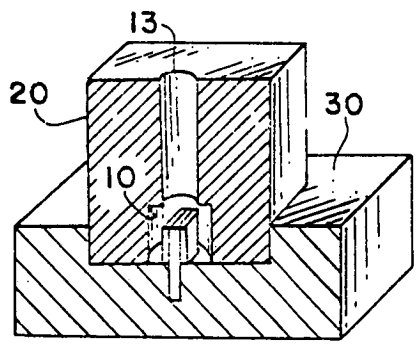
METHOD OF FABRICATING AN OBJECT WITH A THIN WALL HAVING A PRECISELY SHAPED SLIT Patent

P. A. Christopher (McDonnell-Douglas Corp., St. Charles, Mo.), W. J. Gross (McDonnell-Douglas Corp., St. Charles, Mo.), W. H. Henley (McDonnell-Douglas Corp., St. Charles, Mo.), and B. D. Swirsky, inventors (to NASA) (McDonnell-Douglas Corp., St. Charles, Mo.) Issued 26 Mar. 1974 5 p Filed 13 Mar. 1973 Supersedes N73-20526 (11 - 11, p 1297) Sponsored by NASA

(NASA-Case-LAR-10409-1; US-Patent-3,798,741; US-Patent-Appl-SN-340864; US-Patent-Class-29-423) Avail: US Patent Office CSCL 13H

A method is described for making a structure with a cavity and a thin wall with a precisely shaped slit. An object with a cavity having two openings, one of which is to be closed by a thin wall with a slit, is placed on the surface of a fixture. The fixture surface has a slot conforming to the size and shape of the slit to be formed in the thin wall.

Official Gazette of the U.S. Patent Office



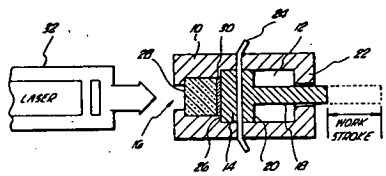
N74-21060* National Aeronautics and Space Administration. Pasadena Office, Calif.

OPTICALLY ACTUATED TWO POSITION MECHANICAL MOVER Patent

Lien C. Yang (JPL) and Arthur J. Murphy, inventors (to NASA) (JPL) Issued 26 Mar. 1974 5 p Filed 24 Aug. 1972 Supersedes N73-29458 (11-20, p 2422) Sponsored by NASA
(NASA-Case-NPO-13105-1; US-Patent-3,798,896; US-Patent-Appl-SN-283502; US-Patent-Class-60-25) Avail: US Patent Office CSCL 13I

An optically actuated mechanical mover adapted to be moved from an ambient position to an active position, is disclosed. The mechanical mover essentially comprises a piston/cylinder arrangement including a piston that is contained within an internal cylindrical chamber of a housing. The cylindrical chamber is configured to permit the piston to be moved for the length of the chamber as a work stroke. A lock pin extending through the piston, and diametrically opposed walls of the chamber housing, retain the piston in the ambient position at one end of the chamber. An actuator for producing a pressure or shock wave that drives the piston is positioned at the end of the chamber corresponding to the piston ambient position.

Official Gazette of the U.S. Patent Office



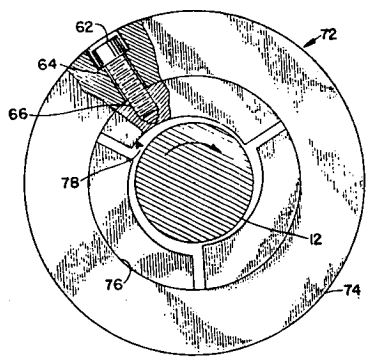
N74-21061* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

JOURNAL BEARINGS Patent

Frederick T. Schuller and Warren A. Moore, inventors (to NASA) Issued 16 Apr. 1974 9 p Filed 27 Mar. 1972 Supersedes N72-21473 (10 - 12, p 1617)
(NASA-Case-LEW-11076-1; US-Patent-3,804,472; US-Patent-Appl-SN-238264; US-Patent-Class-308-73) Avail: US Patent Office CSCL 13I

A plurality of bearing sectors are mounted in a housing. Each sector functions as a lobed area in the bearing to obtain the required lubricant film geometry.

Official Gazette of the U.S. Patent Office



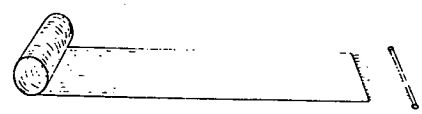
N74-21062* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

DEPLOYABLE PRESSURIZED CELL STRUCTURE FOR A MICROMETEOROID DETECTOR Patent

William H. Kinard, inventor (to NASA) Issued 23 Apr. 1974 8 p Filed 28 Jan. 1972 Supersedes N72-21472 (10 - 12, p 1616)
(NASA-Case-LAR-10295-1; US-Patent-3,805,622; US-Patent-Appl-SN-221685; US-Patent-Class-73-432, US-Patent-Class-73-12) Avail: US Patent Office CSCL 13H

This disclosure comprises a plurality of individual pressurized cells which are caused to leak in response to a micrometeoroid penetration, the leak being sensed by appropriate instrumentation. The plurality of cells may be rolled into a compact arrangement such that the volume of the micrometeoroid detector is small and therefore readily packed in a payload of a launch vehicle. Once the payload is placed in orbit, the rolled up cells can be released, pressurized and provide a relatively rigid, large surface area for detecting micrometeoroid penetration.

Official Gazette of the U.S. Patent Office



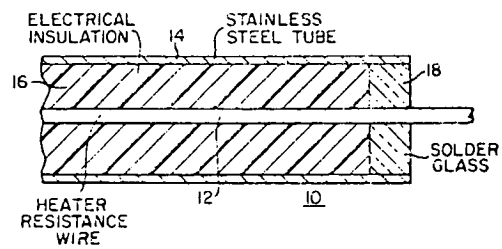
N74-21063* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

GLASS-TO-METAL SEALS COMPRISING RELATIVELY HIGH EXPANSION METALS Patent

Chikara Hirayama, inventor (to NASA) (Westinghouse Elec. Corp., Pittsburgh) Issued 16 Apr. 1974 4 p Filed 21 Apr. 1970 Sponsored by NASA
(NASA-Case-LEW-10698-1; US-Patent-3,804,703; US-Patent-Appl-SN-30498; US-Patent-Class-161-196; US-Patent-Class-106-52; US-Patent-Class-117-129; US-Patent-Class-65-DIG.11) Avail: US Patent Office CSCL 11A

A glass suitable for glass-to-metal seals that has a resistance to attack by moisture and a high coefficient of linear thermal expansion is introduced. Linear expansion covers the range from 12 to 14 x 10 to the minus 6 C between room temperature and 500 C. The glass is essentially composed of, by molar percent, about 9% of K2O, about 10% of Na2O, about 70% of SiO2, about 6% Al2O3, and about 5% of MgO.

Official Gazette of the U.S. Patent Office



N74-21064* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

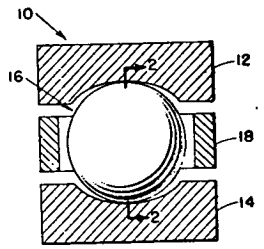
HOLLOW ROLLING ELEMENT BEARINGS Patent

Richard J. Parker, inventor (to NASA) Issued 9 Apr. 1973 4 p Filed 30 Mar. 1973 Supersedes N73-20534 (11 - 11, p 1298) Continuation-in-part of US Patent Appl. SN-201904, filed 24 Nov. 1971
(NASA-Case-LEW-11087-3; US-Patent-3,802,753;

US-Patent-Appl-SN-346361; US-Patent-Class-308-188; US-Patent-Class-308-191; US-Patent-Appl-SN-201904) Avail: US Patent Office CSCL 13I

A low mass rolling element with a lightweight core and hollow center was developed for use in bearings. The core is plated so as to provide a hard surface and increase the life and reliability of the high speed ball bearings.

Official Gazette of the U.S. Patent Office



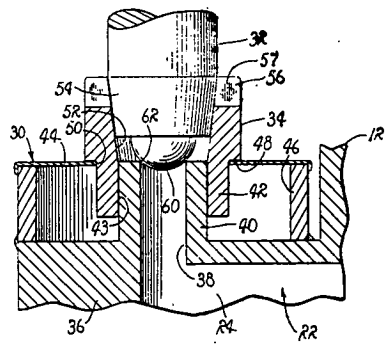
N74-21065* National Aeronautics and Space Administration. Pasadena Office, Calif.

FLOW CONTROL VALVE Patent

Lance G. Hays, inventor (to NASA) Issued 9 Apr. 1974 6 p Filed 7 Sep. 1972 Supersedes N73-10501 (11 - 01, p 0061) (NASA-Case-NPO-11951-1; US-Patent-3,802,660; US-Patent-Appl-SN-287150; US-Patent-Class-251-120; US-Patent-Class-137-628; US-Patent-Class-251-122; US-Patent-Class-251-210) Avail: US Patent Office CSCL 13K

A flow control valve for high temperature fluids is disclosed. The valve is characterized by an all-metal flow control unit including a tubular conduit, terminating in a valve seat, a throttling cone having an internal, truncated conical surface coaxially related to the valve seat and supported for axial motion relative to the seat, and an axially reciprocable, flow-control plug supported in coaxial relation with the cone. The plug is provided with a truncated conical surface configured to be mated with the surface of the throttling cone for regulating a flow of fluid established through the unit and a curved shut-off surface.

Official Gazette of the U.S. Patent Office



16 MASERS

Includes applications of masers and lasers. For basic research see: 26 Physics, Solid State.

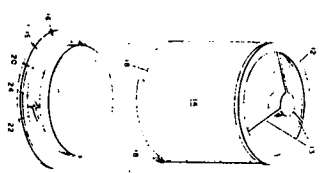
N74-11313* Smithsonian Astrophysical Observatory, Cambridge, Mass.

TUNABLE CAVITY RESONATOR WITH RAMP SHAPED SUPPORTS Patent

Robert F. C. Vessot, Thomas E. Hoffman, and Martin W. Levine, inventors (to NASA) Issued 6 Nov. 1973 5 p Filed 20 Mar. 1972 Supersedes N72-25491 (10 - 16, p 2164) Sponsored by NASA

(NASA-Case-HQN-10790-1; US-Patent-3,771,074; US-Patent-Appl-SN-235962; US-Patent-Class-333-83R; US-Patent-Class-333-97R) Avail: US Patent Office CSCL 20E

A cavity for a hydrogen maser is described consisting of three parts which provide highly stable mechanical and thermal expansion characteristics for the cavity and ease of tuning. The three parts which are made of a glass ceramic material having a very small thermal expansion coefficient (1) a top plate, (2) a cylinder with three interrupted helical ramps at its bottom, and (3) a base which includes a bottom plate and three ramp lugs on which the helical ramps of the cylinder rest when the cylinder is placed on the base with the bottom plate in the cylinder. Cavity tuning is achieved by rotating the cylinder and thereby raising or lowering it on the base, which results in changing the cylinder volume by changing the distance between the bottom and top plates. Offical Gazette of the U.S. Patent Office



N74-13205* Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

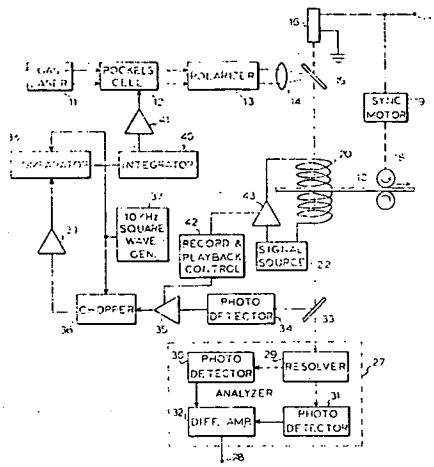
THERMOMAGNETIC RECORDING AND MAGNETO-OPTIC PLAYBACK SYSTEM HAVING CONSTANT INTENSITY LASER BEAM CONTROL Patent

George W. Lewicki and John E. Guisinger, inventors (to NASA) Issued 11 Dec. 1973 9 p Filed 6 Oct. 1971 Supersedes N73-31468 (11 - 22, p 2680) Continuation-in-part of US Patent Appl. SN-034989, filed 6 May 1970 Sponsored by NASA

(NASA-Case-NPO-11317-2; US-Patent-3,778,791; US-Patent-Appl-SN-187143; US-Patent-Class-340-174.1M; US-Patent-Class-179-100.2CH; US-Patent-Class-250-205; US-Patent-Class-250-217; US-Patent-Class-340-174YC; US-Patent-Class-350-151; US-Patent-Appl-SN-34989) Avail: US Patent Office CSCL 20E

A system is developed for maintaining the intensity of a laser beam at a constant level in a thermomagnetic recording and magneto-optic playback system in which an isotropic film is heated along a continuous path by the laser beam for recording. As each successive area of the path is heated locally to the vicinity of its Curie point in the presence of a controlled magnetic field, a magneto-optic density is produced proportional to the amplitude of the controlled magnetic field. To play back the recorded signal, the intensity of the laser beam is reduced and a Faraday or Kerr effect analyzer is used, with a photodetector, as a transducer for producing an output signal.

Official Gazette of the U.S. Patent Office



N74-15145* National Aeronautics and Space Administration. Pasadena Office, Calif.

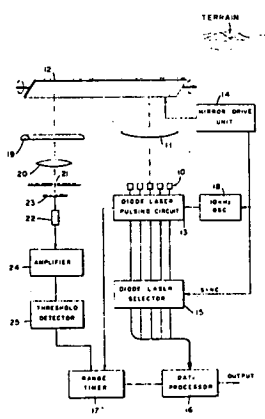
SHORT RANGE LASER OBSTACLE DETECTOR Patent

William L. Kuriger, inventor (to NASA) (JPL) Issued 25 Dec. 1973 8 p Filed 16 Mar. 1972 Supersedes N72-25490 (10 - 16, p 2164) Sponsored by NASA

(NASA-Case-NPO-11856-1; US-Patent-3,781,111; US-Patent-Appl-SN-235268; US-Patent-Class-356-5; US-Patent-Class-356-4; US-Patent-Class-356-152; US-Patent-Class-250-217SS; US-Patent-Class-350-6; US-Patent-Class-331-94.5K; US-Patent-Class-331-94.5S) Avail: US Patent Office CSCL 20E

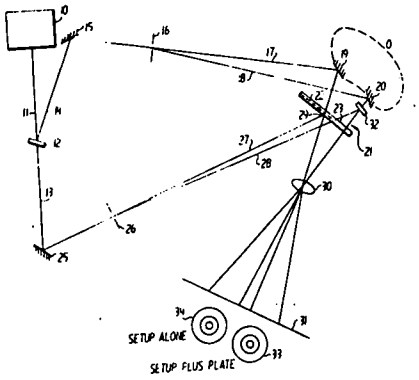
A short range obstacle detector for surface vehicles is described which utilizes an array of laser diodes. The diodes operate one at a time, with one diode for each adjacent azimuth sector. A vibrating mirror a short distance above the surface provides continuous scanning in elevation for all azimuth sectors. A diode laser is synchronized with the vibrating mirror to enable one diode laser to be fired, by pulses from a clock pulse source, a number of times during each elevation scan cycle. The time for a given pulse of light to be reflected from an obstacle and received is detected as a measure of range to the obstacle.

Official Gazette of the U.S. Patent Office



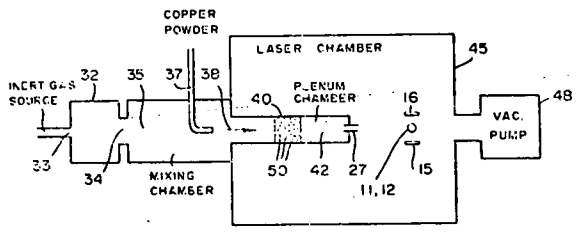
N74-15146* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
METHOD AND APPARATUS FOR CHECKING THE STABILITY OF A SETUP FOR MAKING REFLECTION TYPE HOLOGRAMS Patent
Helmut G. Lackner, inventor (to NASA) Issued 1 Jan. 1974 5 p Filed 18 Aug. 1972 Supersedes N72-31515 (10 - 22, p 2974)
(NASA-Case-MFS-21455-1; US-Patent-3,782,825; US-Patent-Appl-SN-281877; US-Patent-Class-356-106; US-Patent-Class-350-3.5; US-Patent-Class-73-71.3) Avail: US Patent Office CSCL 20E

A method and apparatus are described for checking the stability of a setup for recording reflection-type (white light) holograms. Two sets of interference fringes are simultaneously obtained, one giving information about coherence and stability of the setup alone and the other demonstrating coherence of the entire system, including the holographic recording plate Special emphasis is given to the stability of the plate, due to the fact that any minute vibration might severely degrade or completely destroy the recording.
Official Gazette of the U.S. Patent Office



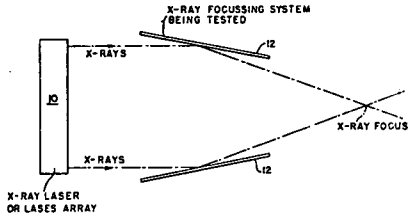
N74-16187*# National Aeronautics and Space Administration. Pasadena Office, Calif.
INERT GAS METALLIC VAPOR LASER Patent Application
Gary R. Russell (JPL), Noble M. Nerheim (JPL), and Thomas J. Pivirotto, inventors (to NASA) (JPL) Filed 3 Dec. 1973 23 p (Contract NAS7-100)
(NASA-Case-NPO-13449-1; US-Patent-Appl-SN-420813) Avail: NTIS HC $3.25 CSCL 20E

A gas laser which uses a mixture of inert gases and metallic vapors as the lasing material was developed. The laser operates in a pulsed mode to provide high average power output. Copper vapor and an inert gas, such as argon or helium, are pulsed by electrodes which receive power from an appropriate pulsed power supply. The laser also includes a pair of mirrors which are spaced apart along an axis defined as the cavity axis about which the electrodes are aligned. The lasing mixture flows in a direction perpendicular to the cavity axis and the current flow direction between the two electrodes. NASA



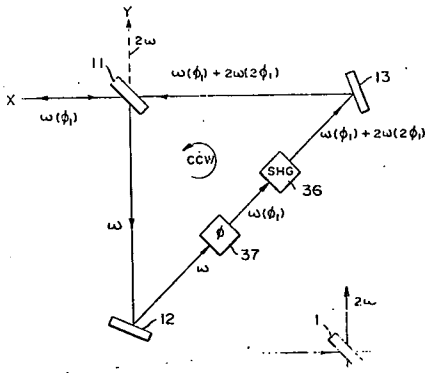
N74-18153*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
TESTING DEVICE USING X-RAY LASERS Patent Application
Carroll C. Dailey, inventor (to NASA) Filed 25 Feb. 1974 7 p (NASA-Case-MFS-22409-1; US-Patent-Appl-SN-445398) Avail: NTIS HC $4.00 CSCL 20E

In order to test X-ray reflecting and focussing surfaces, an X-ray laser is placed near the surface to be tested to provide a nearly parallel beam of X-rays. The testing device is much smaller and more compact, and much less expensive, than conventional long-path vacuum X-ray generators. NASA



N74-20118*# National Aeronautics and Space Administration, Washington, D.C.
LASER SYSTEM WITH AN ANTIRESONANT OPTICAL RING Patent Application
Anthony E. Siegman, inventor (to NASA) (Stanford Univ.) Filed 2 Nov. 1973 22 p
(Grant NGL-05-020-103)
(NASA-Case-HQN-10844-1; US-Patent-Appl-SN-412080) Avail: NTIS HC $4.25 CSCL 20E

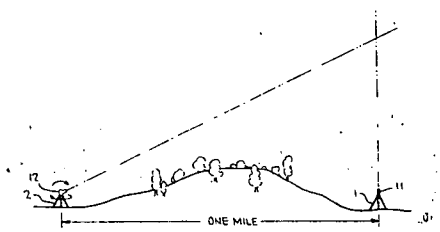
Various applications of an antiresonant ring, consisting of a beam splitter and a number of reflectors are discussed. With the beam splitter having a transmission coefficient equal to a reflection coefficient, an optical beam incident on the beam splitter along a first axis is split into two components which circulate around the ring in opposite directions and are recombined to reflect back the beam along the first axis, with none of the beam power being directed along a second axis. The ring can be used as part of the cavity of two otherwise independent lasers, with two separate laser mediums external to the ring, or with a multi-wavelength laser medium in the ring. NASA



N74-21091* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
LONG RANGE LASER TRAVERSING SYSTEM Patent
Louis O. Caudill, inventor (to NASA) Issued 16 Apr. 1974

6 p Filed 14 Jul. 1971 Supersedes N72-21503 (10 - 12, p 1621)
(NASA-Case-GSC-11262-1; US-Patent-3,804,525; US-Patent-Appl-SN-162380; US-Patent-Class-356-152; US-Patent-Class-356-141; US-Patent-Class-356-172; US-Patent-Class-250-204; US-Patent-Class-33-285) Avail: US Patent Office CSCL 20E

The relative azimuth bearing between first and second spaced terrestrial points which may be obscured from each other by intervening terrain is measured by placing at one of the points a laser source for projecting a collimated beam upwardly in the vertical plane. The collimated laser beam is detected at the second point by positioning the optical axis of a receiving instrument for the laser beam in such a manner that the beam intercepts the optical axis. In response to the optical axis intercepting the beam, the beam is deflected into two different ray paths by a beam splitter having an apex located on the optical axis. The energy in the ray paths is detected by separate photoresponsive elements that drive logic networks for proving indications of: (1) the optical axis intercepting the beam; (2) the beam being on the left of the optical axis and (3) the beam being on the right side of the optical axis. Dissert. Abstr.



17 MATERIALS, METALLIC

Includes cermets; corrosion; physical and mechanical properties of materials; metallurgy; and applications as structural materials. For basic research see: 06 Chemistry. For related information see also: 18 Materials, Nonmetallic; and 32 Structural Mechanics.

N74-10521* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

METHOD OF HEAT TREATING A FORMED POWDER PRODUCT MATERIAL Patent

John C. Freche, William J. Waters, and Richard L. Ashbrook, inventors (to NASA) Issued 16 Oct. 1973 5 p Filed 28 Jun. 1972 Supersedes N72-28542 (10 - 19, p 2575) Continuation-in-part of US Patent Appl. SN-29917, filed 20 Apr. 1970

(NASA-Case-LEW-10805-3; US-Patent-3,765,958; US-Patent-Appl-SN-266928; US-Patent-Class-148-126; US-Patent-Class-29-420.5; US-Patent-Class-75-200; US-Patent-Class-75-226; US-Patent-Appl-SN-29917) Avail: US Patent Office CSCL 11F

Heat treating a product material of prealloyed powders after shaping by superplastic deformation restores the ability of the material to resist deformation at high temperatures. Heat treating is accomplished by heating to a temperature between the solidus and liquidus with the application of isostatic pressure to close any voids. This pressure may be simultaneously applied while the material is at the heat treating temperature. The pressure may also be applied when the material cools to a temperature between that at which it is shaped and the solidus.

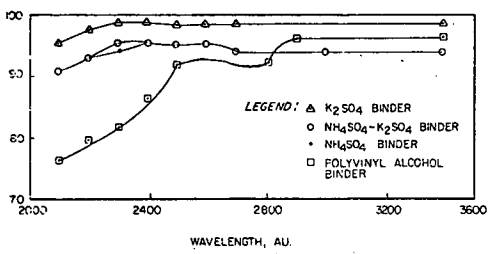
Official Gazette of the U.S. Patent Office

18 MATERIALS, NONMETALLIC

Includes corrosion; physical and mechanical properties of materials (e.g., plastics); and elastomers, hydraulic fluids, etc. For basic research see: 06 Chemistry. For related information see also: 17 Materials, Metallic; 27 Propellants; and 32 Structural Mechanics.

N74-10542*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
ULTRAVIOLET LIGHT REFLECTIVE COATING Patent Application
John B. Schutt, inventor (to NASA) Filed 28 Sep. 1973 17 p
(NASA-Case-GSC-11786-1; US-Patent-Appl-SN-401919) Avail: NTIS HC $3.00 CSCL 11C

An ultraviolet light reflective coating is disclosed which exhibits high reflectance to ultraviolet light having wavelengths down to about 2,000 Angstrom units. The coating composition comprises a dispersion of barium sulphate in an aqueous solution of a water soluble inorganic binder selected from the group consisting of alkali metal sulphates, ammonium sulphate, and mixtures of the two sulphates. The coating is preferably employed in conjunction with an alkaline primer. NASA

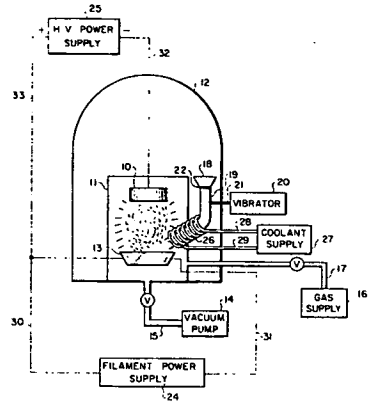


N74-11366*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
FIBER MODIFIED POLYURETHANE FOAM FOR BALLISTIC PROTECTION Patent Application
Richard H. Fish, John A. Parker, and Robert W. Rosser, inventors (to NASA) Filed 17 Sep. 1973 17 p
(NASA-Case-ARC-10714-1; US-Patent-Appl-SN-398885) Avail: NTIS HC $3.00 CSCL 11D

A closed cell foam is described for ballistic protection which has superior properties to the flamable foams of combustible and/or noxious gas nature. The foam is based on a polyurethane resin and is filled with fibers, preferably glass fibers. The foam has good fire resistant properties and does not produce noxious fumes when heated. It has good mechanical properties and does not require external support. NASA

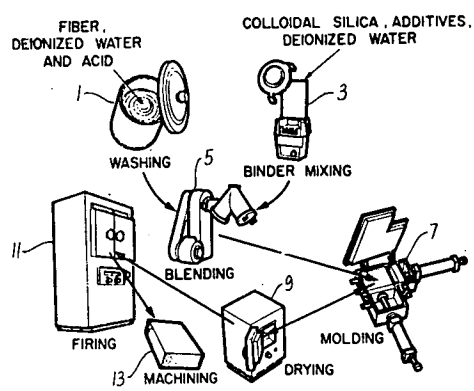
N74-13270* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
DEPOSITION OF ALLOY FILMS Patent
Talivaldis Spalvins, inventor (to NASA) Issued 13 Nov. 1973 4 p Filed 21 Apr. 1971 Supersedes N71-34455 (10 - 21, p 3437)
(NASA-Case-LEW-11262-1; US-Patent-3,772,174; US-Patent-Appl-SN-136008; US-Patent-Class-204-192) Avail: US Patent Office CSCL 11F

An invention is described which deposits metal alloy films on a metal object. A glow discharge is established by applying a high voltage between an anode and a cathode object disposed in an inert gas atmosphere. An alloy of two or more metals is vaporized and the vapor injected into the glow discharge causing the alloy to be plated onto the cathode object.
Official Gazette of the U.S. Patent Office



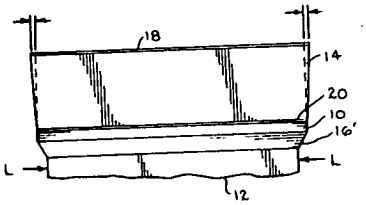
N74-14230*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
SILICA REUSABLE SURFACE INSULATION Patent Application
Howard E. Goldstein, Marnell Smith, and Daniel Leiser, inventors (to NASA) Filed 26 Dec. 1973 13 p
(NASA-Case-ARC-10721-1; US-Patent-Appl-SN-427775) Avail: NTIS HC $3.00 CSCL 11D

A silica surface insulation material, ordinarily in the form of reusable tiles, is provided which is easy to manufacture and has efficient fire retardant and insulating properties. The method is shown wherein silica fibers are washed, blended with a colloidal silica permanent binder and a temporary binder and are then mixed and molded into a desired shape. The tiles are then dried and fired at an elevated temperature which burns out the temporary binder and leaves only the silica fibers bound with fused silica. Upon cooling, the tiles are machined to a desired size. NASA



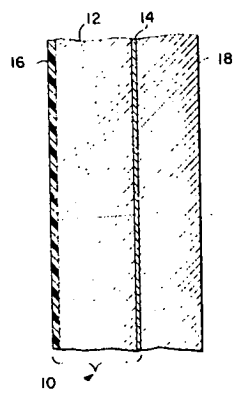
N74-15213*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
STRAIN ARRESTOR PLATE Patent Application
Murat H. Kural, inventor (to NASA) Filed 28 Nov. 1973 15 p
(Contract NAS9-12083)
(NASA-Case-MSC-14182-1; US-Patent-Appl-SN-419748) Avail: NTIS HC $3.00 CSCL 11D

An improved technique of attaching rigid thermal insulator tiles to metallic sub-panels or structural members on the exposed surfaces of spacecraft or other frameworks is described. Heretofore this has been done by a flexible bond, but it has been found that at temperatures below the glass transition range such bonds lose their flexibility and transfer more strains to the insulator tiles. The problem is solved by incorporation of a strain arrestor plate adjacent to the insulator tile and secured with an adhesive which may be either a flexible bond or a hard bond. Since most rigid thermal insulators are made of low expansion materials, Invar may be used for the plate, where weight is not a problem, but the preferred material is the lighter weight combination of fibers cast in a thermosetting resin. The preferred material is graphite fibers in an epoxy resin, built up in layers with various fiber orientations to obtain the desired strength, stiffness and thermal properties. NASA



N74-16246*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
PARTICULATE AND SOLAR RADIATION STABLE COATING FOR SPACECRAFT Patent Application
Wayne S. Slemp, inventor (to NASA) Filed 27 Dec. 1973 10 p
(NASA-Case-LAR-10805-1; US-Patent-Appl-SN-428992) Avail: NTIS HC $3.00 CSCL 11D

A laminate thermal control coating for spacecraft is described. The coating is comprised of a layer of solar radiation stable film, a layer of particulate-radiation stable film applied to the upper surface of the solar-radiation stable film, and a layer of reflecting material applied to the lower surface of the solar radiation stable film. The coating experiences no increase in solar radiation absorptance upon exposure to particular or solar radiation as the particulate radiation is substantially absorbed in the particulate radiation stable layer and the solar radiation partially absorbed by the particulate radiation stable layer is transmitted by the solar-radiation stable film to the reflecting material which reflects it back through the laminate and into space. NASA



N74-16249*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
TRANSPARENT FIRE RESISTANT POLYMERIC STRUCTURES Patent Application
George M. Fohlen, John A. Parker, and Paul M. Sawko, inventors (to NASA) Filed 29 Jan. 1974 28 p
(NASA-Case-ARC-10813-1; US-Patent-Appl-SN-437556) Avail: NTIS HC $3.50 CSCL 11D

Transparent impact-, heat- and fire-resistant polymeric materials for making windows, windshields and plane canopies were developed. The polymeric materials comprise an epoxy resin cured with an alkoxy boroxine catalyst and a polycarbonate resin, preferably a polyphenolphthalein carbonate resin. Laminates including the advantages of both resins comprise a transparent layer of epoxy resin and a transparent layer of a polycarbonate resin joined together with a transparent adhesive interlayer.
Author

N74-17283* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
NONFLAMMABLE COATING COMPOSITIONS Patent
Albert C. Krupnick, Carlo F. Key, and Roger J. Harwell, inventors (to NASA) Issued 8 Jan. 1974 4 p Filed 26 Sep. 1972 Continuation-in-part of abandoned US Patent Appl. SN-84212, filed 26 Oct. 1970
(NASA-Case-MFS-20486-2; US-Patent-3,784,499; US-Patent-Appl-SN-292382; US-Patent-Class-260-29.6S; US-Patent-Appl-SN-84212) Avail: US Patent Office CSCL 11C

Nonflammable coating compositions are described for use in high-oxygen environments which include an aqueous suspension of synthetic mica, an alkali metal silicate gelant and a waterbase latex resin emulsion. Inorganic white and/or color pigments and additives such as glass microballoons are employed to provide a wide range of colors and optical properties.
Official Gazette of the U.S. Patent Office

N74-18197*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
DUPLEX ALUMINIZED COATINGS Patent Application
Michael A. Gedwill and Salvatore J. Grisaffe, inventors (to NASA) Filed 24 Jan. 1974 9 p
(NASA-Case-LEW-11696-2; US-Patent-Appl-SN-436315) Avail: NTIS HC $4.00 CSCL 11C

Coated metallic base systems are described with particular attention to oxidation-resistant alloy overlay coatings and claddings on superalloys and dispersion-strengthened alloys. A ductile, oxidation-resistant metallic alloy layer covers the surface of a superalloy substrate. This layer is achieved by foil cladding, physical vapor deposition, ion plating, sputtering, plasma spraying or slurry sintering. The chemistry of the overlay layer is such that the oxidation resistance of the subsequently aluminized outermost layer is not seriously degraded. The aluminide outer layer can be developed by pack cementation, metallizing, dipping, spraying, physical vapor deposition, ion plating, sputtering, or electrophorosis. NASA

N74-20152*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
FABRICATION OF POLYPHENYLQUINOXALINE COMPOSITE ARTICLES BY MEANS OF IN SITU POLYMERIZATION OF MONOMERS Patent Application
Tito T. Serafini, Peter Delvigs, and Raymond D. Vannucci, inventors (to NASA) Filed 17 Dec. 1973 12 p
(NASA-Case-LEW-11879-1; US-Patent-Appl-SN-425362) Avail: NTIS HC $4.00 CSCL 11D

A process is described for impregnating and polymerizing in situ, on a substrate, equimolar amounts of aromatic or heterocyclic

bis(orthodiamine). The reaction is carried out in situ on the substrate at room temperature or below. Final curing is then obtained by heating the impregnated substrate at temperatures above 300 C to yield a polymer with molecular weights of 5,000 to 1,000,000. The monomer solution is prepared by first mixing solutions of the bis(orthodiamine) and phenylglyoxal and applying the resulting solution to the substrate or by applying the solutions of starting materials, separately to the substrate. In a preferred embodiment, equimolar amounts of solutions of 4,4 prime-bis(phenylglyoxalyl) diphenyl ether and 3,3 prime, 4,4 prime tetraminobenzophenone are mixed and the resulting solution applied to graphite fiber wound on a mandrel, the solvent removed, and final cure carried out at a temperature of 315 C for 1-1/2 hours.

NASA

N74-21156* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

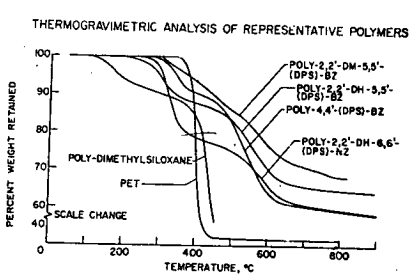
ULTRAVIOLET AND THERMALLY STABLE POLYMER COMPOSITIONS Patent

Ronald F. Reinisch, Hermilo R. Gloria, Ronald E. Goldsberry, and Michael J. Adamson, inventors (to NASA) Issued 9 Apr. 1974 8 p Filed 5 Jan. 1973 Supersedes N73-29554 (11 - 20, p 2435)

(NASA-Case-ARC-10592-1; US-Patent-3,803,090; US-Patent-Appl-SN-321179; US-Patent-Class-260.46.5E) Avail: US Patent Office CSCL 11D

A class of polymers is provided, namely, poly(diarylsiloxy) arylazines. These polymers have a basic chemical composition which has the property of stabilizing the optical and physical properties of the polymer against the degradative effect of ultraviolet light and high temperatures. This stabilization occurs at wavelengths including those shorter than found on the surface of the earth and in the absence or presence of oxygen, making the polymers of the present invention useful for high performance coating applications in extraterrestrial space as well as similar applications in terrestrial service. The invention also provides aromatic azines which are useful in the preparation of polymers such as those of the present invention.

Official Gazette of the U.S. Patent Office



---

19 MATHEMATICS

Includes calculation methods and theory; and numerical analysis. For applications see specific categories. For related information see also 08 Computers.

No abstracts in this subject category.

20 METEOROLOGY

Includes climatology; weather forecasting; and visibility studies. For related information see also: 13 Geophysics; and 30 Space Sciences.

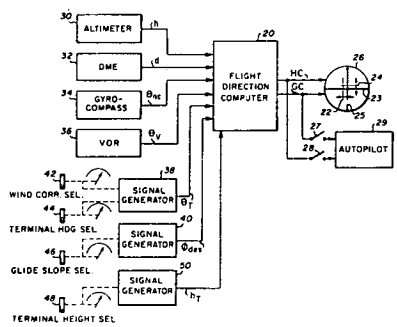
No abstracts in this subject category.

21 NAVIGATION

Includes guidance; autopilots; star and planet tracking; inertial platforms; and air traffic control. For related information see also: 07 Communications.

N74-13420* National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.
TERMINAL GUIDANCE SYSTEM Patent
Shu W. Gee, inventor (to NASA) Issued 4 Dec. 1973 15 p Filed 6 Mar. 1972 Supersedes N72-21632 (10 - 12, p 1638) (NASA-Case-FRC-10049-1; US-Patent-3,776,455; US-Patent-Appl-SN-232021; US-Patent-Class-235-150.22; US-Patent-Class-235-150.26; US-Patent-Class-235.150.27; US-Patent-Class-244-77A; US-Patent-Class-244-77B; US-Patent-Class-343-108R) Avail: US Patent Office CSCL 17G

A terminal guidance system is described including a heading command subsystem and a glide-slope command subsystem which develop command signals for use in guiding an aircraft or other vehicle into a preselected heading and/or altitude at a terminal point. The heading command subsystem is responsive to certain input data and continuously develops command signals for use in directing the aircraft from a remote location to a terminal point so that upon arrival it has a preselected terminal heading. The glide-slope command subsystem is responsive to certain other input data and continuously develops command signals for use in controlling the rate of descent of the aircraft so that it will have a preselected altitude and glide-slope upon arrival at the terminal. Official Gazette of the U.S. Patent Office



22 NUCLEAR ENGINEERING

Includes nuclear reactors and nuclear heat sources used for propulsion and auxiliary power. For basic research see: 24 Physics, Atomic, Molecular, and Nuclear. For related information see also: 03 Auxiliary Systems; and 28 Propulsion Systems.

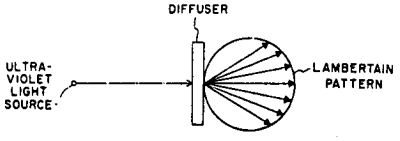
No abstracts in this subject category.

23 PHYSICS, GENERAL

Includes acoustics, cryogenics, mechanics, and optics. For astrophysics see: 30 Space Sciences. For geophysics and related information see also: 13 Geophysics; 20 Meteorology; and 29 Space Radiation.

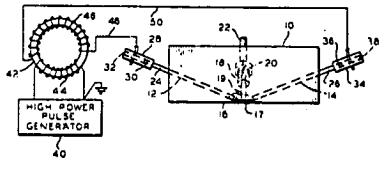
N74-13436* National Aeronautics and Space Administration, Langley Research Center, Langley Station, Va.
TRANSMITTING AND REFLECTING DIFFUSER Patent
Lloyd S. Keafer, Jr., Ernest E. Burcher, and Leonard P. Kopia, inventors (to NASA) Issued 18 Dec. 1973 5 p Filed 30 Mar. 1972 Supersedes N72-28694 (10 - 19, p 2595) Continuation-in-part of abandoned US Patent Appl. SN-38816, filed 19 May 1970
(NASA-Case-LAR-10385-2; US-Patent-3,779,788; US-Patent-Appl-SN-239803; US-Patent-Class-117-33.3; US-Patent-Class-117-106A; US-Patent-Appl-SN-38816) Avail: US Patent Office CSCL 20F

A near-Lambertian diffuser is described which transmits and reflects ultraviolet light. An ultraviolet grade fused silica substrate is coated with vaporized fuse silica. The coating thickness is controlled, one thickness causing ultraviolet light to diffuse and another thickness causing ultraviolet light to reflect a near Lambertian pattern. Official Gazette of the U.S. Patent Office



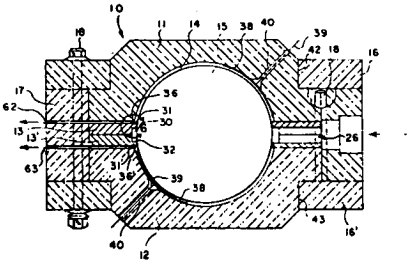
N74-15395* National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.
METHOD AND APPARATUS FOR NONDESTRUCTIVE TESTING Patent
James M. Hoop, inventor (to NASA) Issued 1 Jan. 1974 6 p Filed 20 Apr. 1972 Supersedes N72-25627 (10 - 16, p 2183)
(NASA-Case-MFS-21233-1; US-Patent-3,782,177; US-Patent-Appl-SN-246056; US-Patent-Class-73-71.5U; US-Patent-Class-73-67.5R; US-Patent-Class-324-40) Avail: US Patent Office CSCL 20N

High voltage is applied to an arc gap adjacent to a test specimen to develop a succession of high frequency arc discharges. Those high frequency arc discharges generate pulses of ultrasonic energy within the test specimen without requiring the arc discharges to contact that test specimen and without requiring a coupling medium. Those pulses can be used for detection of flaws and measurements of certain properties and stresses within the test specimen. Official Gazette of the U.S. Patent Office



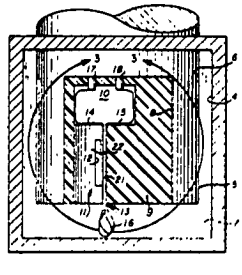
N74-18323* National Aeronautics and Space Administration Marshall Space Flight Center, Huntsville, Ala.
CRYOGENIC GYROSCOPE HOUSING Patent
Wilhelm Angele, inventor (to NASA) Issued 9 Oct. 1973 10 p Filed 13 Jun. 1972 Supersedes N72-27731 (10 18, p 2467)
(NASA-Case-MFS-21136-1; US-Patent-3,763,708; US-Patent-Appl-SN-262430; US-Patent-Class-74-5.7; US-Patent-Class-308-10) Avail: US Patent Office CSCL 20L

A cryogenic gyroscope housing having gas spin-up means provided in annular discs inserted between housing shells is described. A circumferential recess in the inner edges of the discs at their juncture serves as the gas spin-up channel, and recesses in the discs at their junctures with the shells form suction channels. The discs also have inlet and outlet ports communicating with the spin-up channel and exhaust slots communicating with the suction channels. Mating surfaces of the discs and housing shells are held in position by optical contact at the equational plane of the housing. Suspension electrodes and thin-film readout loops are disposed in shells. A centering band and clamp rings provide for proper alinement and placement of parts in formation of optical contact joints. Official Gazette of the U.S. Patent Office



N74-21300* National Aeronautics and Space Administration Ames Research Center, Moffett Field, Calif
HIGH SPEED SHUTTER Patent
James O. McClenahan, inventor (to NASA) Issued 19 Mar 1974 7 p Filed 30 Jun. 1972 Supersedes N72-27739 (10 18, p 2468)
(NASA-Case-ARC-10516-1; US-Patent-3,797,919; US-Patent-Appl-SN-267768; US-Patent-Class-350-270; US-Patent-Class-354-234) Avail: US Patent Office CSCL 20F

A shutter element is described which is formed by a loop of an electrically conductive ribbon disposed adjacent to the end of a passageway to be shuttered. The shuttered end of the passageway is cut at an acute angle. The two leg portions of the ribbon loop are closely spaced to each other and disposed in a plane parallel to the axis of the passageway A pulse of high current is switched through the loop to cause the current flowing in opposite directions through adjacent leg portions of the ribbon. This produces a magnetically induced pressure on one of the legs of the ribbon forcing the leg over the end of the passageway in gas tight sealing engagement, and thereby blocking passageway. Official Gazette of the U S Patent Office



N74-21304* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

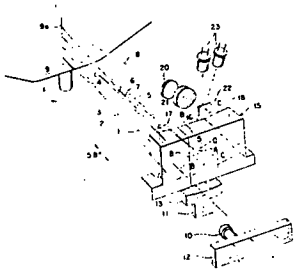
METHOD AND APPARATUS FOR OPTICALLY MONITORING THE ANGULAR POSITION OF A ROTATING MIRROR

Patent

Jack C. Lansing, Jr. (Hughes Aircraft Corp., Los Angeles) and Richard W. Cline, inventors (to NASA) (Hughes Aircraft Corp., Los Angeles) Issued 9 Apr. 1974 6 p Filed 6 Jun. 1972 Supersedes N72-27736 (10 - 18, p 2468) Sponsored by NASA

(NASA-Case-GSC-11353-1; US-Patent-3,802,779; US-Patent-Appl-SN-260241; US-Patent-Class-356-152; US-Patent-Class-250-231SE; US-Patent-Class-350-299) Avail: US Patent Office CSCL 20F

An optical system monitors the angular position of a rotating scanning mirror to indicate the effective start and end of each scan. At a certain angular position, a ray of energy transmitted to the mirror is reflected a plurality of times between the reflectors associated with the optical system and the line on the mirror parallel to the axis, and then to a detector to sense that angular position. A single optical system may be arranged to sense a plurality of different angular positions for each revolution of the mirror. Official Gazette of the U.S. Patent Office



24 PHYSICS, ATOMIC, MOLECULAR, AND NUCLEAR

Includes atomic, molecular and nuclear physics. For applications see: 22 Nuclear Engineering. For related information see also: 29 Space Radiation.

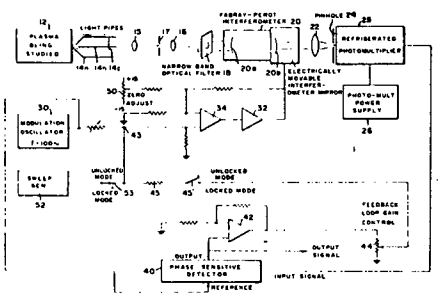
N74-19310* National Aeronautics and Space Administration, Washington, D.C.

DOPPLER SHIFT SYSTEM Patent

Sol Aisenberg, inventor (to NASA) (Space Sci., Inc., Waltham, Mass.) Issued 5 Mar. 1974 6 p Filed 28 Jun. 1972 Supersedes N72-28719 (10 - 19, p 2598) Sponsored by NASA

(NASA-Case-HQN-10740-1; US-Patent-3,795,448; US-Patent-Appl-SN-266943; US-Patent-Class-356-28; US-Patent-Class-356-106R; US-Patent-Class-356-112) Avail: US Patent Office CSCL 20H

A system is described for measuring velocities of radiating particles based on Doppler shift. Light from the particles is directed through a narrow band optical filter to a Fabry-Perot interferometer initially tuned to a selected center line corresponding to zero particle Doppler shift. The movable mirror of the interferometer is made to sweep about the center line by the output of a modulation oscillator. The fringe pattern output is imaged onto a pin hole through which light is directed to a photomultiplier. The output of the photomultiplier is supplied to a phase sensitive detector with the oscillator output as a reference signal and which operates in the quadrature mode. The detector's output is gain controlled and is combined with the oscillator's output to adjust the interferometer's movable mirror to acquire the line center. Official Gazette of the U.S. Patent Office



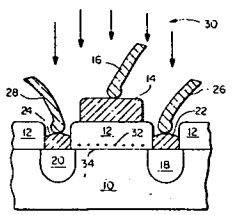
N74-20329* National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Md.

RADIATION HARDENING OF MOS DEVICES BY BORON Patent

Vitaly Danchenko, inventor (to NASA) Issued 26 Mar. 1974 4 p Filed 9 Dec. 1971 Supersedes N72-20637 (10 - 11, p 1503)

(NASA-Case-GSC-11425-1; US-Patent-3,799,813; US-Patent-Appl-SN-206266; US-Patent-Class-148-1.5) Avail: US Patent Office CSCL 18F

A technique is described for radiation hardening of MOS devices and specifically for stabilizing the gate threshold potential at room temperature of a radiation subjected MOS field-effect device with a semiconductor substrate, an insulating layer of oxide on the substrate, and a gate electrode disposed on the insulating layer. The boron is introduced within a layer of the oxide of about 100 A-300 A thickness immediately adjacent the semiconductor-insulator interface. The concentration of boron in the oxide layer is preferably maintained on the order of 10 to the 18th power atoms/cu cm. The technique serves to reduce and substantially annihilate radiation induced positive gate charge accumulations. Official Gazette of the U.S. Patent Office



25 PHYSICS, PLASMA

Includes magnetohydrodynamics. For applications see: 28 Propulsion Systems.

No abstracts in this subject category.

26 PHYSICS, SOLID-STATE

Includes semiconductor theory; and superconductivity. For applications see: 16 Masers. For related information see also: 10 Electronics.

No abstracts in this subject category.

27 PROPELLANTS

Includes fuels; igniters; and oxidizers. For basic research see: 06 Chemistry; and 33 Thermodynamics and Combustion. For related information see also: 28 Propulsion Systems

N74-20397*# National Aeronautics and Space Administration. Pasadena Office, Calif.

PREVENTION OF HYDROGEN EMBRITTLEMENT OF HIGH STRENGTH STEEL Patent Application

Leonard Weber, inventor (to NASA) (McDonnell-Douglas Corp., Santa Monica, Calif.) Filed 28 Sep. 1973 10 p

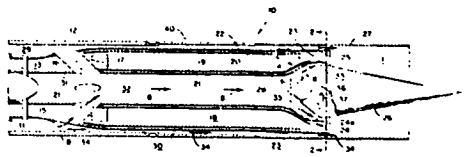
(Contract NAS7-811)

(NASA-Case-NPO-12122-1; US-Patent-Appl-SN-401921) Avail: NTIS HC $4.00 CSCL 21I

Delayed failure of high strength steel alloys exposed to compositions containing hydrazine is prevented by addition of potassium hydroxide to the composition in an amount at least sufficient to neutralize acidic impurities. The removal of the acidic impurities eliminates evolution of hydrogen and thus avoids hydrogen embrittlement of the high strength steel alloys. NASA

28 PROPULSION SYSTEMS

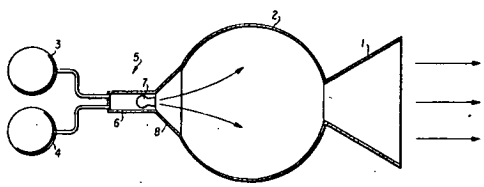
Includes air breathing, electric, liquid, solid, and magneto-hydrodynamic propulsion. For nuclear propulsion see: 22 Nuclear Engineering. For basic research see. 23 Physics, General; and 33 Thermodynamics and Combustion. For applications see: 31 Space Vehicles. For related information see also: 27 Propellants.



N74-13502* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
SUPERSONIC-COMBUSTION ROCKET Patent
Richard J. Weber and Leo C. Franciscus, inventors (to NASA) Issued 11 Dec. 1973 5 p Filed 10 Mar. 1972 Supersedes N72-20769 (10 - 11, p 1520)
(NASA-Case-LEW-11058-1; US-Patent-3,777,490; US-Patent-Appl-SN-233519; US-Patent-Class-60-258; US-Patent-Class-60-259) Avail: US Patent Office CSCL 21H

A supersonic combustion rocket is provided in which a small rocket motor is substituted for heavy turbo pumps in a conventional rocket engine. The substitution results in a substantial reduction in rocket engine weight. The flame emanating from the small rocket motor can act to ignite non-hypergolic fuels.

Official Gazette of the U.S. Patent Office



N74-15453* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
GAS TURBINE EXHAUST NOZZLE Patent
David M. Straight, inventor (to NASA) Issued 25 Dec. 1973 6 p Filed 19 Dec. 1972 Supersedes N73-14792 (11 - 05, p 0590)
(NASA-Case-LEW-11569-1; US-Patent-3,780,827; US-Patent-Appl-SN-316618; US-Patent-Class-181-43) Avail: US Patent Office CSCL 21F

An elongated hollow string is disposed in an exhaust nozzle combustion chamber and communicates with an air source through hollow struts at one end. The other end of the string is bell-mouth shaped and extends over the front portion of a nozzle plug. The bell-mouth may be formed by pivotally mounted flaps or leaves which are used to vary the exhaust throat area and the area between the plug and the leaves. Air from the engine inlet flows into the string and also between the combustion chamber and a housing disposed around the chamber. The air cools the plug and serves as a low velocity inner core of secondary gas to provide noise reduction for the primary exhaust gas while the other air, when it exits from the nozzle, forms an outer low velocity layer to further reduce noise. The structure produces increased thrust in a turbojet or turbofan engine.

Official Gazette of the U.S. Patent Office

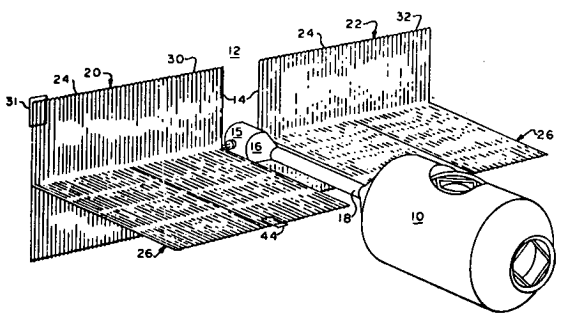
29 SPACE RADIATION

Includes cosmic radiation; solar flares; solar radiation, and Van Allen radiation belts. For related information see also: 13 Geophysics; and 24 Physics, Atomic, Molecular, and Nuclear.

N74-14496*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
SOLAR ENERGY POWER SYSTEM Patent Application
Billy K. Davis, inventor (to NASA) Filed 4 Dec. 1973 18 p (NASA-Case-MFS-21628-1; US-Patent-Appl-SN-421702) Avail: NTIS HC $3.00 CSCL 20M

A solar energy vapor (freon) powered system is described for generating electrical energy in which a portion of the heat absorbed from the sun in daylight is stored for use during darkness by a thermal capacitor. A mass of Pyrone, having a high thermal capacity, liquifies when heat is applied to it and goes through a solidification process to provide a heat output. A highly efficient solar boiler is constructed, utilizing an anodized titanium surface and a particular combination of shaped boiler tubes and complementary reflectors. The overall efficiency of the system is further improved by an arrangement of heat recovery devices.

NASA



30 SPACE SCIENCES

Includes astronomy and astrophysics; cosmology; lunar and planetary flight and exploration; and theoretical analysis of orbit and trajectory. For related information see also: 11 Facilities, Research and Support; and 31 Space Vehicles.

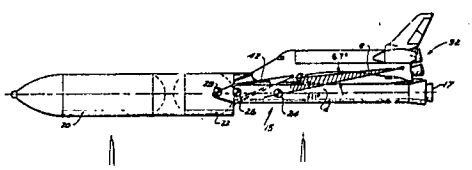
No abstracts in this subject category.

31 SPACE VEHICLES

Includes launch vehicles; manned space capsules; clustered and multistage rockets; satellites; sounding rockets and probes; and operating problems. For basic research see: 30 Space Sciences. For related information see also: 28 Propulsion Systems; and 32 Structural Mechanics.

N74-20541*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
A SPACE VEHICLE Patent Application
George L. VonPragenau, inventor (to NASA) Filed 21 Mar. 1974 18 p
(NASA-Case-MFS-22734-1; US-Patent-Appl-SN-453232) Avail: NTIS HC $4.00 CSCL 22B

A space vehicle with an improved ascent configuration was designed. The spacecraft consisted of a winged orbiter with an elongated fuselage and rearwardly directed main engines fixed to the fuselage. A tank assembly located on the forward portion of the fuselage and connected with the main engines supplies liquid rocket propellants. A booster stage consisting of a pair of integrated solid rocket boosters is connected with the orbiter immediately below the fuselage and parallel to it. Drawings of the spacecraft configuration are provided. An analysis of the anticipated performance characteristics is developed.
Official Gazette of the U.S. Patent Office



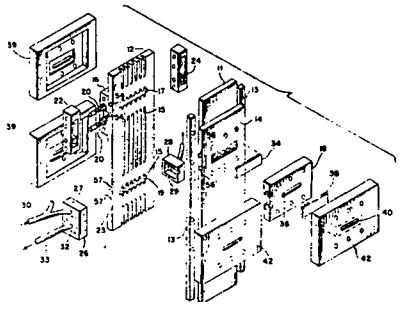
32 STRUCTURAL MECHANICS

Includes structural element design and weight analysis; fatigue; thermal stress; impact phenomena; vibration; flutter; inflatable structures; and structural tests. For related information see also: 17 Materials, Metallic; and 18 Materials, Nonmetallic.

N74-19528* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
ANTI-BUCKLING FATIGUE TEST ASSEMBLY Patent
Fred E. Eichenbrenner and Leland A. Imig, inventors (to NASA)
Issued 5 Mar. 1974 6 p Filed 30 Mar. 1972 Supersedes N72-27947 (10 - 18, p 2496)
(NASA-Case-LAR-10426-1; US-Patent-3,795,134;
US-Patent-Appl-SN-239575; US-Patent-Class-73-15.6;
US-Patent-Class-73-91) Avail: US Patent Office CSCL 20K

An antibuckling fatigue test assembly is described for holding a metal specimen which is subjected to compression and to rapid cyclical heating and cooling while permitting visual observation. In an illustrative embodiment of this invention, the anti-buckling fatigue test apparatus includes first and second guide members between which the metal specimen is disposed and held, a heating assembly comprising a suitable heating source such as a quartz lamp and a reflecting assembly directing the heat onto the specimen, and a cooling assembly for directing a suitable cooling fluid such as air onto the specimen. The guide members each have a passage to permit the heat to be directed onto the specimen. An opening is provided in the reflecting assembly to permit visual inspection of that region of the specimen adjacent to the opening onto which the heat is directed.

Official Gazette of the U.S. Patent Office

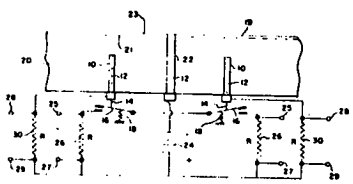


33 THERMODYNAMICS AND COMBUSTION

Includes ablation, cooling, heating, heat transfer, thermal balance, and other thermal effects; and combustion theory. For related information see also: 12 Fluid Mechanics; and 27 Propellants.

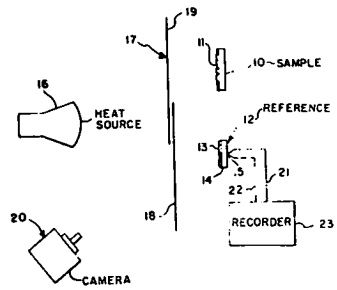
N74-15652* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
DUAL MEASUREMENT ABLATION SENSOR Patent
Charles A. Gurtler, inventor (to NASA) Issued 1 Jan. 1974 5 p Filed 11 Aug. 1971 Supersedes N72-11830 (10 -02, p 0262)
(NASA-Case-LAR-10105-1; US-Patent-3,782,181; US-Patent-Appl-SN-170680; US-Patent-Class-73-86) Avail: US Patent Office CSCL 20M

A dual measurement ablation sensor for measuring both char-interface and surface recession at a point in an ablating material is described. The sensor permits measurement of the thickness of the char layer. Char-interface recession is indicated by a drop in the resistance to a current passed through the ablation material. Surface recession is indicated by the closing of an electrical circuit when melting causes the release of a spring switch. Official Gazette of the U.S. Patent Office



N74-18551* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.
METHOD FOR DETERMINING THERMO-PHYSICAL PROPERTIES OF SPECIMENS Patent
Robert A. Jones, inventor (to NASA) Issued 5 Feb. 1974 5 p Filed 18 Aug. 1972 Supersedes N73-11972 (11 - 02, p 0243)
(NASA-Case-LAR-11053-1; US-Patent-3,789,654; US-Patent-Appl-SN-281875; US-Patent-Class-73-15R) Avail: US Patent Office CSCL 20M

The square root of the product of thermophysical properties q, c and k, where p is density, c is specific heat and k is thermal conductivity, is determined directly on a test specimen such as a wind tunnel model. The test specimen and a reference specimen of known specific heat are positioned at a given distance from a heat source. The specimens are provided with a coating, such as a phase change coating, to visually indicate that a given temperature was reached. A shutter interposed between the heat source and the specimens is opened and a motion picture camera is actuated to provide a time record of the heating step. The temperature of the reference specimen is recorded as a function of time. The heat rate to which both the test and reference specimens were subjected is determined from the temperature time response of the reference specimen by the conventional thin-skin calorimeter equation.
Official Gazette of the U.S. Patent Office

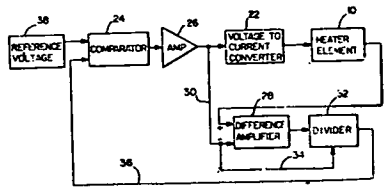


N74-18552* National Aeronautics and Space Administration. Pasadena Office, Calif.
HEAT TRANSFER DEVICE Patent
Ralph W. Kalkbrenner, inventor (to NASA) (Westinghouse Elec. Corp., Pittsburgh) Issued 5 Feb. 1974 4 p Filed 21 May 1970 Supersedes N70-41524 (08 - 23, p 4427) Sponsored by NASA
(NASA-Case-NPO-11120-1; US-Patent-3,789,920; US-Patent-Appl-SN-39343; US-Patent-Class-165-105; US-Patent-Class-29-157.3R; US-Patent-Class-267-166) Avail: US Patent Office CSCL 20M

A heat transfer device is characterized by an hermetically sealed tubular housing including a tubular shell terminating in spaced end plates, and a tubular mesh wick concentrically arranged and operatively supported within said housing. The invention provides an improved wicking restraint formed as an elongated and radially expanded tubular helix concentrically related to the wick and adapted to be axially foreshortened and radially expanded into engagement with the wick in response to an axially applied compressive load. The wick is continuously supported in a contiguous relationship with the internal surfaces of the shell.
Official Gazette of the U.S. Patent Office

N74-19583*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.
SELF-REGULATING PROPORTIONALLY CONTROLLED HEATING APPARATUS AND TECHNIQUE Patent Application
Maxwell G. Strange, inventor (to NASA) Filed 27 Feb. 1974 17 p
(NASA-Case-GSC-11752-1; US-Patent-Appl-SN-446569) Avail: NTIS HC $4.00 CSCL 20M

A self-regulating, proportionally controlled heating apparatus is described. In the device, a single electrical resistance heating element having a temperature coefficient of resistance serves simultaneously as a heater and a temperature sensor. Block diagrams are provided of the electrical circuits involved. The equipment provides precision control of the temperature of a heater element in a proportional and continuous fashion and eliminates the need for a temperature sensor apart from the heater element itself.
NASA



N74-19584*# National Aeronautics and Space Administration. Pasadena Office, Calif.

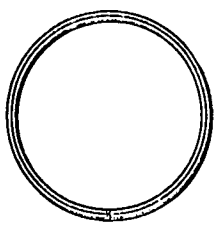
METHOD OF FORMING A WICK FOR A HEAT PIPE Patent Application

Frank G. Arcella (Westinghouse Elec. Corp.), Ernest C. Phillips (Westinghouse Elec. Corp.), and Richard P. Sprecace, inventors (to NASA) (Westinghouse Elec. Corp.) Filed 27 Feb. 1974 10 p Prepared for JPL

(Contracts NAS7-100; JPL-953074)

(NASA-Case-NPO-13391-1; US-Patent-Appl-SN-446567) Avail: NTIS HC $4.00 CSCL 20M

A method for forming a tubular wick for heat pipes is presented. The method consists of steps involving forming the wick blank of a predetermined thickness from multiple layers of stainless steel screen mesh. The process makes it possible to reduce the pore size of the wicks by approximetely fifty percent. NASA



34 GENERAL

Includes information of a broad nature related in industrial applications and technology, and to basic research; defense aspects; information retrieval; management; law and related legal matters; and legislative hearings and documents.

No abstracts in this subject category.

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA SP-7039 (05)		

4. Title and Subtitle	5. Report Date
NASA PATENT ABSTRACTS BIBLIOGRAPHY A Continuing Bibliography	July 1974
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
9. Performing Organization Name and Address National Aeronautics and Space Administration Washington, D. C. 20546	10. Work Unit No.
	11. Contract or Grant No.
12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
	14. Sponsoring Agency Code

15. Supplementary Notes

Section 1 - Abstracts

16. Abstract

This bibliography is issued in two sections: Section 1 - Abstracts, and Section 2 - Indexes. This issue of the Abstract Section cites 217 patents and applications for patent introduced into the NASA scientific and technical information system during the period of January 1974 through June 1974. Each entry in the Abstract Section consists of a citation, an abstract, and, in most cases, a key illustration selected from the patent or application for patent. This issue of the Index Section contains entries for 2653 patent and application for patent citations covering the period May 1969 through June 1974. The Index Section contains five indexes -- subject, inventor, source, number and accession number.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Bibliographies Inventions NASA Programs Patents	Unclassified - Unlimited

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price*
Unclassified	Unclassified	124	$3.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22151

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

SPECIAL FOURTH-CLASS RATE
BOOK

POSTAGE AND FEES PAID
NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
451

U.S.MAIL

POSTMASTER: If Undeliverable (Section 158 Postal Manual) Do Not Return

"The aeronautical and space activities of the United States shall be conducted so as to contribute . . . to the expansion of human knowledge of phenomena in the atmosphere and space. The Administration shall provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."

—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

NASA SCIENTIFIC AND TECHNICAL PUBLICATIONS

TECHNICAL REPORTS: Scientific and technical information considered important, complete, and a lasting contribution to existing knowledge.

TECHNICAL NOTES: Information less broad in scope but nevertheless of importance as a contribution to existing knowledge.

TECHNICAL MEMORANDUMS: Information receiving limited distribution because of preliminary data, security classification, or other reasons. Also includes conference proceedings with either limited or unlimited distribution.

CONTRACTOR REPORTS: Scientific and technical information generated under a NASA contract or grant and considered an important contribution to existing knowledge.

TECHNICAL TRANSLATIONS: Information published in a foreign language considered to merit NASA distribution in English.

SPECIAL PUBLICATIONS: Information derived from or of value to NASA activities. Publications include final reports of major projects, monographs, data compilations, handbooks, sourcebooks, and special bibliographies.

TECHNOLOGY UTILIZATION PUBLICATIONS: Information on technology used by NASA that may be of particular interest in commercial and other non-aerospace applications. Publications include Tech Briefs, Technology Utilization Reports and Technology Surveys.

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546